The Builder.

Vol. XLVIII. No. 2210. SATURDAY, JUNE 13, 1885.

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The Glasgow Corporation Waterworks.

ON the 14th of October, 1859, a day of most inclement weather as it proved, Her Majesty, accompanied by the Prince Consort and retinue, arrived at Loch Katrine from Edinburgh, and there formally opened the new water supply for the City of Glasgow. The Loch Katrine-Glasgow aqueduct, as designed by Mr. J. F. Bateman, C.E., was from the first recognised, and justly so, as one of the most stupendous works of the kind of any age; and the confident calculation was that the city, though admitted to be a manifestly growing community, had been endowed with a water supply which would certainly suffice in overflowing abundance for the better part of a century to come. The loch, which is from eight to nine miles in length, with a surface area of about 3,000 acres, in order to adapt it fully for the purpose designed had its level raised permanently by 4 ft., the new mark standing 362 ft. above the datum line of spring-tide high-water at Glasgow. The water thus additionally dammed was tapped at a point 3 ft. below the line of the old natural surface, in this way affording an available storage of 7 ft. depth very nearly over the whole of the 3,000 acres of loch area. The daily outflow stood, in the original estimate, at 50,000,000 gallons, but the impeding friction within the many miles of roughly-blasted rock tunnelling had been considerably underrated, and it proved that a daily flow of 38,000,000 gallons, only, formed about the utmost stretch of the new works' capacity. Ample in every existing sense this supply was indeed found for a period of years; but Glasgow was all the while maintaining a growth-rate of quite unexpected vigour. Including its fringe of circumjacent burghs, which are now virtually portions of the city though nominally independent municipalities, Glasgow may be said to have very nearly trebled itself in size and population since the Loch Katrine water scheme was first practically taken in hand as a possible and likely project. The intramural house-clad elevations of which a considerable part of the area is composed first began to experience an intermittent absence of water, the gravitation pressure in certain instances proving insufficient for forcing the pipe-currents to their summit reaches, except at those seasons when the consumption over the city generally was at its lowest. By reason also of the wet closet system being universal and the presence of built-in baths very general (small houses of only two apartments are occasionally found fitted with these) Glasgow possesses a singularly powerful capacity for a wholesale, not to say wanton, consumption of water, and this the Corporation officers have found it quite impossible to keep within anything like strictly economic compass. A large and still increasing volume of but slightly utilised water pours incessantly into the Clyde; the population, over all, borders upon a total of 800,000, while the Loch Katrine supply, magnificent as it no doubt has been and is, has all along remained inelastic. The authorities have thus been gradually forced onwards, until now they are brought face to face with the necessity of furnishing with as little further delay as possible a largely-increased supply.

Accordingly, a Bill passed before Lord Redesdale as an unopposed measure on the 18th of May of the present year, authorising the Corporation of Glasgow to extend their works in connexion with the supply of water to the city from Loch Katrine. Before entering upon the details of its powers, it will be interesting to briefly notice a few of the leading features of the existing works. In the first place, it was thought that the present tunnels could be widened, and so admit of a larger flow of water into the reservoirs at Mugdock and the new reservoir at Craigmaddie at present constructing, an Act for which was obtained in 1882. It may here be remarked that the immediate object of the Act of 1882 was to secure for Glasgow fourteen additional days' supply in the event of an accident to any part of the aqueduct. It had long been observed that the rough rock sides of the tunnels had a serious retarding effect upon the velocity of the water passing through them. Another suggestion was made to line them with concrete. Both ideas, however, were ultimately discarded as absolutely impracticable, as the consumption of water by the city is now so great that a very small margin of time can be allowed for the examination of the aqueduct and its maintenance in a state of repair. For this purpose five stoppages in the flow of water are made in the year for five days upon each occasion, and it is found that the twenty-five days thus gained are entirely taken up in the ordinary way of examination and repair. To give an adequate idea of the force of this remark, it will only be necessary to observe that the geological formations met with in a large portion of the aqueduct are mica-schist and clay-slate, and another long tunnel passes through compact sandstone conglomerate. The time consumed in the operations in the former hard material was simply enormous. When the tunnels were being formed the work was carried on night and day, and yet the amount done was often less than three lineal yards per month at each face. Hand labour was preferred to perforating-machines for the drilling of the holes for blasting purposes, and very slow progress was consequently made, a bore-hole of 1¼ in. diameter and the ordinary depth of 20 in. being driven on an average at the rate of one-fifth of an inch in one minute of time. A gang of men taking down with them at night 60 drills to an 8 ft. space, frequently returned in the morning with every one of their drills dulled. The tunnel passes through ten miles of this description of rock. It will be obvious, then, that the idea of enlarging the existing tunnels, and in that way providing for a larger flow of water, was preposterous. The consumption of water by the city is at the rate of 42 million gallons per day, and the present aqueduct only admits of the passage of that volume of water. The actual limit having thus been reached the situation at once becomes serious, and two possibilities force themselves upon the mind: first, the failure of any part of the works; second, a considerable increase in the demand upon the supply. In view of these contingencies a temporary alternative has been found in the use of Deacon's system of District Meters throughout the city, by means of which any undue waste of water can be detected and means taken to prevent its continuance. The system has worked so well that it is being rapidly extended. Our space will not admit of our enlarging upon this point. It may, however, with advantage be here observed that the waste of water from the use of improper fittings is often less serious than that due to the bursting or other injury done to main or service pipes, where the water, escaping into a sewer, passes off undetected. By the use of Deacon's Waste-water Meters such an accident is easily discovered. The saving of water in this way has averaged 13 gallons per head; but, taking it at 10 gallons, the saving over the whole city would be 7½ million gallons per day, or about one-fifth of the water supply, and at an expenditure of one-third of the capital represented by this saving.

The existing Loch Katrine-Glasgow aqueduct, it should be noted, is thirty-four miles in total length; twenty-six miles between the loch and Mugdock service reservoir, and eight miles thence to Glasgow itself. After clearing the mountain girdle encircling the loch, its course pursues, in irregular form, a south and by east direction, passing Loch Chon and Loch Ard at close quarters, and shortly afterwards crossing the Duchray streamlet, which is part of the head waters of the river Forth, and, of course, flows eastwards. The valley of the Endrick, whose course is westward into Loch

Lomond, is next crossed, passage thence being taken by way of Killearn village and Blane valley on to the small town of Milngavie, in the neighbourhood of which it discharges its freight into Mugdock reservoir, situated 311 ft. above Clyde high-water level, and possessing a capacity of 550,000,000 gallons. The distribution begins at this point by means of branching cast-iron mains 36 in. in diameter. The engineering interest, however, is confined exclusively to the other and much larger section. Leaving the loch, 2 miles below the "Rob Roy" landing-place at Stronachlacher Inn, and about four or five miles above the romantic gorge of the Trossachs, the aqueduct at once begins the piercing of a spur-flank of lofty Ben Venue at a crossing possessing a summit height of 600 ft. This is done by a rock-blasted tunnel 2,325 yards in length, cut through beds of gneiss and mica slate, and with a bore of 8 ft. diameter. The fall here and all along to Mugdock, except where syphon-piping is used in crossing valleys, is the uniform one of 10 in. to the mile. Where the surface is followed the conduit is composed of arched masonry of 8 ft. inside diameter, this alternating with tunnel-cutting and syphon-pipes where necessary, the 26 miles from Katrine to Mugdock being made up of 13 miles of tunnelled work; 9¼ of arched masonry, and 3¾ of iron piping. The works as here briefly described, inclusive of compensation awards, cost one milion and a half sterling.

The reservoir in course of construction will hold 700 million gallons, or fourteen days' supply in addition to the ten days' supply already provided by the existing reservoir. It is not intended to proceed with the whole of the new works at once, but in the first place to duplicate some of the tunnels, especially those parts where it is known that the water is most retarded. This being done, an entirely new aqueduct is only a matter of time. This, however, will be delayed after the necessary duplicate tunnels have been made, till the storage at the lochs is increased, Loch Katrine being raised in level. The raising of the level of Loch Katrine will necessitate the construction of a new road on the north shore, a new hotel at Stronachlacher, and new landing-piers for the convenience of the steamboats plying upon the loch. The other items necessary for the completion of the aqueduct will be proceeded with as additional water is wanted.

When the proposed works are carried out, a continuous supply of 75 million gallons of water will have been provided. The limits of the present Bill are there reached, but the whole system will not then be complete. The intended aqueduct is designed on a sufficiently large scale to allow ultimately of the passage of 70 million gallons, while the existing one passes 40 million gallons. Allowing 10 per cent. for stoppages in the flow for examination and repairs, the supply will have been increased to 100 million gallons. The additional powers requisite are, however, an after consideration.

The new aqueduct will consist of 12½ miles of tunnelling, 9 miles of open cutting arched over with masonry and bridges, and 3¾ miles of syphon pipes. It will follow the same line as the existing one at a distance of 22 yards from it, and will be upon the same level. The difference in the cost of constructing an aqueduct of the proposed dimensions and one of the existing dimensions is estimated at about 150,000*l.*

With regard to the sources of supply, water can be drawn from Loch Katrine and the other lochs in the immediate vicinity without injury to any interest whatever. Loch Katrine itself is so situated as to level that it forms a convenient centre into which water may be drawn from all the other lochs in the locality. During the winter months there is a very large overflow of water from Loch Katrine. In order to make it available for supply purposes it is intended to increase its storage capacity. It may here be remarked that the loch derives the full benefit of any rainfall that takes place, as it flows rapidly down the steep mountain-sides, thus admitting of very little possible evaporation or absorption. Calculations derived from carefully gauging the discharge of water from the loch by the streams give the result that in very dry years, such, for instance, as 1869 (which was the driest year since 1859), when the present works were completed, a supply of 75 million gallons may be depended upon by raising Loch Katrine 5 ft. above its present high-water level, and converting Loch Arklet into a reservoir, by raising it 25 ft. in level. Loch Arklet is a small loch, situated between Loch Katrine and Loch Lomond, and has an area of 200 acres, which would be increased by the proposed alterations to 400 acres. Objection as to any possible difference in the water of the two lochs has been anticipated by the proposal to convey it, not directly into Loch Katrine, but to within a short distance of its outlet, where a portion of it will pass directly down the river into Loch Vennachar, and the portion remaining will be thoroughly mixed with Loch Katrine water, and exposed to air, before it can reach the inlet to the aqueduct five miles higher up.

The supply which the proposed works will render available for the city, calculating upon the most reliable data, will only serve the city for about thirty-six years from the present time. This is considered a sufficiently long period to anticipate. It means, however, less than double the present supply, while the works about to be undertaken for the supply of Manchester from Thirlmere will yield 2½ times the present requirements of that city.

It remains to be said that the whole cost of the new works is estimated at 1,000,000*l.* sterling. The revenue of the Commission has gone on increasing so rapidly for many years past that it is not intended that the rates be increased even for a short time. Very little doubt is entertained by those in a position to judge, as to the possibility of completing the whole of these new works without the slightest further demand upon the pockets of the ratepayers of the city of Glasgow.

The passing of the Bill through Parliament has been throughout in charge of Dr. Marwick, Town Clerk, and Mr. James Gale, the Corporation Engineer. The construction of the works will be under the immediate direction of Mr. Gale, a gentleman long and worthily associated with Glasgow in the capacity of Water Engineer.

FOREIGN BRASSES.

THE publication of a series of facsimiles of foreign brasses by the Rev. W. F. Creeny fulfils a great want in the history of these Mediæval monuments.* And the mode in which it has been accomplished, by making photo-lithographic reductions of well-executed rubbings, is the only one which had the slightest chance of ever being successful. The expense of accurate engravings would have been enormous, and the time during which such a work would run would have tired out every subscriber. Whatever deficiencies, therefore, the mode of operation involves, we must accept the result on account of the advantages and the truth of the general impression. No engravings in Gough's "Sepulchral Monuments," nor among those published by Cotman, are to be depended on; indeed, they are very inaccurate; but here we have real facsimiles, though in delicate details they necessarily sometimes fail. By means of this important work we can now enter into a general history of the monumental brass.

There is no doubt whatever that the incised slab was the forerunner of the brass, and there are examples of a very rude character, which must be dated very much before the brass recorded as once existing at St. Paul's, Bedford, viz., 1208. They continued in use, as well as the brass, until the end of the sixteenth century in a more or less degree. To what country we owe the beginning of the incised work on metal, as a more enduring and handsome material, is an unsolved problem, and although in this work we have the earliest example known, viz., that to Bishop Ysowilpe, 1231, at Verden, it does not help us in our difficulty. It accords with no known type; conventional representations of features, in general so good a test, are here too rudely given to enable us to speak with certainty: the execution is by thin lines keeping to the same diameter, and the figure is not cut out to the outline as in English examples, but has for its background the plain metal,—the inscription being on the verge. Both arms of the figure are raised, supporting two models, one in each hand,—in the right a church, which is said to represent that of St. Andrew, in Verden, where the brass now lies, the tower of which he rebuilt; in the left the same tower appears within a fortified enclosure, as he is said to have put a ring wall about the city. It is worthy of remark, that there is yet in France a church within a fortified wall of the thirteenth century at Sentein, in the department of Arriège. The costume of the figure consists of a plain alb, with, as we consider, *loose* sleeves, those closer fitting to the wrist belonging to the cassock. There is chasuble, with dalmatic and a pallium, but as he was not an archbishop we can hardly, perhaps, apply that name to it. There is neither stole, maniple, nor amice. The mitre is of a very low, simple form.

Figures holding models are not very common in brasses. It is singular, therefore, that the two earliest of the foreign examples should show this feature; for that of Bishop Otto of Brunswick, 1279, at Hildesheim, given in the same page as the former, holds a model of the Castle of Woloenbergh, of which he was the builder. Now, it must be remembered that our earliest English brass is that of Sir John Daubernoun, 1277, at Stoke Dabernon, Surrey; it is useful, therefore, to make a comparison of the execution of the two, as far as possible. One can trace an analogy in the treatment of the drapery, as also in parts of the features. It is slight, but worth noting, as it tends to point to a common origin for this kind of monument, although one cannot fix upon that country which first set the example, and political boundaries go for little in the matter. In general treatment, having blank metal for background, it is in accord with the last-named.

Before we proceed further it is well to glance at the three divisions of the monumental brass, those of England, Flanders, and Germany; for France, having lost hers, is of little account; but if we judge by what evidence we possess in the character of her incised slabs, they would come as intermediate between those of the two first-named. The only example now in France is at the Cathedral of Amiens, and is given in this work, and its character is distinctly Flemish. The English brass is marked by being cut to its outline, whether of figure or architecture. The Flemish is generally known by its presenting a large oblong surface of metal, on which the figures are engraved, and surrounded by either the most elaborate architectural details or rich diaper-work. In general the German follows the Flemish principle, but differs in details, and it developed into a distinct type. But we have examples of the Flemish following the English habit, and some late English examples the Flemish. There is a separation between them in the mode of execution: the English use the graver or burin, properly so called, viz., a lozenge-shaped tool; the Flemings made more, indeed an excessive, use of the *scorper*, a chisel-cutting tool, which tended to confine them to lines of equal thickness, or nearly so, thus possessing less grace than our English examples. This defect may be seen in all those magnificent works which, now, for the first time, we have an opportunity of comparing one with another, as well as in those of St. Alban's, Lynn, and Newark, which belong to the same school, if not to the same hand. Before, however, we take this group, we must note that to Bernard de Lippe, 1340, at Paderborn, for this is treated exactly after the English fashion, and in general character might easily be taken to be of English workmanship, except for the disproportionate size of the two shields at the head, and their being placed diagonally.

The series of Flemish brasses of the fourteenth century here given comprises that of

* "A Book of Facsimiles of Monumental Brasses of the Continent of Europe." By the Rev. W. F. Creeny, M.A., vicar of St. Michael-at-Thorn, Norwich. (To be had of the author.)

King Eric Menved and Ingeborg his queen, 1319, at Ringstead, Denmark; two at Schwerin, 1347 and 1375; one at Lübeck, 1350; one at Stralsund, 1357; and one at Thorn, 1361. Those already noted, as in England, belong to this same time, and thus we have nine of the most elaborate specimens of Mediæval engraving extant. All these show the figures set under canopies of the richest tabernacle work, which finds no parallel in our English architecture of the same epoch. The abundance of small figures introduced, the exuberance of the ornament and diaper work, the fancy everywhere displayed, commands our admiration; and we cannot wonder that Gough, speaking of those at Lynn, pronounced them to be the work of a Cellini of the fourteenth century. The plan observed in all these compositions is very much the same; the shafts of the canopies have their niches filled with small figures of the Prophets and Apostles, ranged together, the former distinguished by their holding scrolls, the latter by their emblems. The upper part above the heads of the figures exemplifies the redemption of the soul, which is sometimes given as being borne by angels in a winding-sheet to Paradise; sometimes as in the bosom of Father Abraham; and it is necessary to note that this figure is never distinguished by the crossed nimbus, as in the three persons or symbols of the Trinity. There are also instances of the combination of the two ideas. The first is seen in that at Ringstead; the second in the two at Schwerin, and that of Stralsund, whilst the combination is found in those of Lübeck and Thorn. Mr. Creeny states that, in this latter there is a distinction of sex in the symbol of the soul, and, if he be correct, as doubtless he is, it is a singular idiosyncrasy on the part of the artist, no such distinction having been usually recognised. There is a small brass to the memory of Walter Beauchamp, doubtless a child, at Chekendon Church, Oxfordshire, which simply consists of the sexless symbol of the soul, borne in a winding-sheet by two angels: date about 1430. In the brass at Ringstead, the figure of the soul is partially clothed in its winding-sheet, but this is not always observed, and only when in Abraham's bosom.

As a memorial to a king and queen, this brass fitly takes precedence in the group to which it belongs, as we have no other royal brass. The king is in a long tunic, richly emblazoned with three lions passant guardant in a field semée of hearts; and it is fastened on the breast by a small ring brooch, such as are occasionally met with, having amatory posies. And it is worthy of remark that the general outline to this is very much in harmony with one found near Scarborough, formerly in Lord Londesborough's collection, but probably of the seventh or eighth century. The figure of the queen has also one, but of simpler outline. Both have the usual mantles of estate, and are crowned,—the king, in right hand, holding up a drawn sword, that of Justice; in his left a sceptre. The queen holds a sceptre in her right hand and a book in her left. This is an early instance of the introduction of the latter in monuments, especially when not to one of the clerical order. The richness of the detail can only be understood by a close examination of the fac-simile. The faces of the figures are not in brass, but are insertions, that of the king being of marble, the queen of alabaster. These are also restorations, and do not too closely accord with the conventional style of the time. It must be also remarked that the date, 1319, is much too early for the character of the execution, which is fully thirty years later.

Of the two at Schwerin, to the four bishops of the Bulowe family, that of Ludolph and Heinrich is the grandest, full of the pomp of heraldry and worldly display, and one of the finest brasses in existence, though yielding to that of Lübeck to Bishops Burchard de Serken and John de Mul. But the other, to Bishops Godfrey and Frederic de Bulowe, is the more interesting from its details, reminding us of the two at Lynn. At the foot of one figure is a banquet to a hairy king, served by hairy men, who cook before him. Beneath the other is seen a wild man on horseback carrying off a damsel; he is pursued by a knight on horseback issuing from a castle. The hairy king is sitting in a tent; a wild man has apparently left it to receive the abducted damsel. It doubtless illustrates an old romance of similar import to Valentine and Orson. The inscription goes all round in a wavy fillet, making a Jesse tree with royal figures playing upon a variety of musical instruments. At the feet of the bishops of the Lübeck brass are the stories of St. Nicholas and St. Eloy or Eligius. The brass at Stralsund to Albert Hovener, 1357, has hunting scenes at the feet, and some details are so close to those at Lynn that it is almost inevitable to pronounce it by the same hand. It is to be regretted that these small subjects could not have been given in a larger size; as with the banquet on the brass of Robert Braunch, as well as the other subjects on that of Adam de Walsokne, at St. Margaret's, Lynn, we have a very remarkable series, which deserve great attention for their design and execution. Neither of the latter fine brasses is accurately given by Cotman, although boldly etched. The example at Brussels to John and Gerard de Heere, 1398, is a very inferior work, though belonging in date to our group.

When we get into the fifteenth century, the Flemish brass changes its character to some extent, rejecting architectural arrangements which it before rejoiced in. This new departure was larger in character, consisting of admirably-designed diapered backgrounds, often intermingled with heraldic devices. Two fine specimens at Bruges illustrate this new phase. One to Joris de Munter and wife, 1439, consists of figures in winding-sheets or shrouds, loosely arranged and in well-folded drapery; figures of angels with scrolls above and below. But we do not consider, with Mr. Creeny, that there is any idea of ascension intended to be conveyed, but that the figures lie, as in death, on the diapered ground. The diaper in this case is said by Mr. Weale to be similar in design to a specimen preserved, as he thinks, in Stettin Museum. One of the most effective of this class is that which forms our larger illustration. It is in the Cathedral of Bruges, and is to the memory of Martin de Visch, 1452, who is represented as a knight in armour with hands conjoined in prayer, and wearing a tabard of his arms, the sleeves terminating closely at the wrist. His head is bare, and beneath it is his shield emblazoned, the sole instance of one so placed; and above this his helmet and crest, seemingly consisting of a fish disporting betwixt two tails of a bird, encircled by a coronet. The mantling is finely arranged, and altogether it is one of the most remarkable of heraldic displays in the volume, and in no way excelled. The diaper of the background consists of the device of a talbot dog, with collar of bells, couchant, beneath which is the word "Moy," which Mr. Weale interprets "Gentillement," and all is interwoven with conventional floriated work, constituting one of the best examples of Flemish design. The inscription incloses this, having the symbols of evangelists at the corners and the centre, on each side, broken by the armorial bearings. An outside rim made up of a series of horses' bits, another device, completes this interesting and fine brass.

There is another at Lübeck, which belongs to this type, but, in this case, it is to a civilian, who is represented in a long richly-embroidered tunic, with furred cuffs, collar, and flounce, the execution of the fur being remarkably fine. This brass commemorates two of the same name,—John Luneborch, 1461, and another John in 1474. Mr. Creeny is doubtless right in assigning the figure to the first, who was mayor of this city. The head has all the characteristics of portraiture, being full of individuality, and is an early instance of such. The background is composed of Flamboyant architecture and diaper, which, with the root of Jesse worked outside the inscription, has much that is earlier in character, resembling some of the examples previously alluded to. Before one passes from the Flemish brass, it is necessary, at least, to call to mind that which is on the title of the work, forming merely an oblong border with a wavy fillet for the inscription, between which are disposed subjects illustrating the ages of man's life. It would be long to describe this fully, which is well done in the volume, and refer to an article on the general subject in the Proceedings of the London and Middlesex Archæological Society, 1875. We must here, however, point out that the main divisions are six, each having three subjects, viz., Childhood, Boyhood, Youth, Manhood, Age, Decrepitude. It is exceedingly interesting in its details, calling to mind many incidents familiar to us as "household words" out of the play of our great poet. It is preserved at St. Mary's, Ypres, the date being 1489.

We now turn to the German series, and of these the earliest seem to emulate, and sometimes copy, the character of the Flemish, but at a distance, introducing variations of their own. There are the same oblong surfaces with elaborate architecture, but no embroidered backgrounds. The metal is often so cut away as to give a semi-relief to the work, which, therefore, cannot be quite satisfactorily rendered by a rubbing. Those most worthy of attention are from Erfurt, Breslau, and Posen. But the special character which distinguishes itself, as a type, not having any analogy with either Flemish or English examples, has more interest in our inquiry. One remarkable feature is that portraiture becomes the rule rather than the exception. In England this is not generally developed until the sixteenth century. There is also another peculiarity, the great heraldic display, with largely-proportioned escutcheons, crests, and mantling placed at the feet of the figures, and reaching a full third, and sometimes half up in front. An importance is also given to the figures by the rejection of all redundant accessories. That to Canon Georius de Lewenstein at Bamberg, 1464, illustrates this phase of design; the head turns a little on one side, showing a three-quarter face, and holds a book, which is now frequent with ecclesiastics. The figure fills an arched recess, which has a diapered background. It is to be noted also that the characters of the inscription are Roman, showing the growing classic influences. But we find this alternates often with the Mediæval types. There is another at Bamberg, evidently by the same hand, to Canon John de Limburg, 1478, but here the inscription is Mediæval in its character. At Meissen there are nine examples of great interest, as they are of the Dukes of Saxony and family. They are all of one general type of the oblong plate, varying only in details, sometimes showing a clinging to Mediæval forms, in others mingling them up with cinque-cento ideas. This is especially shown in the border of that to Frederick, Duke of Saxony, 1517. Many of them also rejoice in a great display of heraldry. One of these is selected for our smaller illustration, viz., that of Sidonia, the daughter of George Podiebrad, king of Bohemia, and wife of Albert, Duke of Saxony. She died in 1510. This brass has been ascribed to Albrecht Dürer; but, without attempting to decide such a question, it is impossible not to see that a refined hand has here been at work. The simplicity of the treatment, good drawing, well-arranged drapery, and, above all, the expression put into the face, declare the mind of a master. We seem to look through an arch into an oratory, the windows showing behind. There is a diapered curtain behind the figure, which holds a rosary and seems as if in prayer, and two coats of arms are at the feet. It is to be remarked that the inscription, arranged all round in two rows, is Mediæval in its characters, which, in the brass of her husband, are Roman, though it is earlier in date. A very interesting account of this pious lady is given in the text. The later brasses at Meissen show a rapid degeneracy, but have some interest nevertheless. But to follow up decline is never a pleasant task. After the culmination of art in the sixteenth century, there were many causes,—social, political, and religious,—which hastened its decadence. When a tradition is broken, the dissevered links are not easily united.

This notice would be imperfect if it did not

glance a little back to our English school, and make some comparison. Our brasses are in much greater numbers than those abroad, notwithstanding a large amount of destruction. In richness or exuberant fancy we can in no way compare with the Flemish type. But we have a speciality of our own, which is very interesting, as it declares the distinctness of the school from its foreign neighbours. Nor need we in any way lower our sails. If we consider such examples as that of Prior Nelond at Cowfold, Sussex, with its precision of execution, the light elegant treatment of its canopy; those of Cobham, Kent, to the memory of Sir Reginald Braybrook, and to Sir Nicholas Hawberk; that to Sir Thomas Beauchamp, Earl of Warwick, with its delicate *opus ponsatum* at St. Mary's, Warwick; that to Sir Nicholas Carew at Beddington, Surrey, and to Sir John Leventhorp, Sawbridgeworth, Herts; besides many others of the first quarter of the fifteenth century, we shall find, for simplicity, grace of execution, and qualities of drawing, there is no equal amongst the foreign brasses. This quality of drawing is finely shown in the hounds at the feet of Sir Nicholas Carew and Sir John Leventhorp, and these are but types of excellence found in many others of the period, of very varied design. It is most satisfactory, therefore, in making this comparison, that we can vindicate the claims of our English type; not only is it distinct from the foreign, but, as regards the period to which we have alluded, it is superior in those qualities which are demanded in the higher walks of art.

Something may be said on the process in making these fac-similes. It is a new idea, and Mr. Creeny demands our best thanks. But the heel-ball process, although showy, is liable, on account of the waxy nature of the material, to obliterate details of fine work, and also to take away from some of the precision of the larger parts. The finest rubbings we have ever seen from brasses have been executed on highly-glazed tissue-paper, with black lead mixed with linseed-oil, and applied by a rubber of wash-leather. Even when badly done, it gives more exactness, and is the *only* process where reductions are required for engraving. A rendering by the photo-litho process, here adopted, from rubbings done in this manner, would, especially in delicate details, make a very complete and satisfactory result, and it may suggest itself to others for the publication of such fac-similes as are here presented, of many of the fine examples of Flemish and other brasses in England as yet unrecorded, or so imperfectly as to be behind the requirements of our time. The text of Mr. Creeny's book is full of interesting matter, very carefully put together, and showing a good deal of research, and the work commends itself as the only one on the subject.

NOTES.

IF any doubt prevailed as to the existence of a depression or uncertainty, such as has not been known in this generation, it would be at once dispelled by the enormously long list of country houses and properties to be disposed of, as shown in the columns of a recent issue of the *Times*. Look at it how we will, it is a most unsatisfactory testimony to the stagnation of trade, the decline of agriculture, and the loss of confidence that have so peculiarly characterised the last two or three years; and if, Asmodeus like, we could peep into the interiors of the various mansions, a pitiful tale of ruined fortunes would be disclosed. A noteworthy feature at the present time is the unusually large number of estates and houses of antiquarian or historic interest, though it is to be feared that the old associations will not add much to the sale price. Scotland figures rather prominently in the catalogue, the principal estate being that of Fyvie Castle, Aberdeenshire, in which Edward I. is said to have spent a night in 1296. It is built in the form of an L with three towers, of different dates, and called respectively the Preston, Meldrum, and Gordon Towers, the ancient entrance being between the two first, flanked by round bastions. The Preston tower was built in 1390, when the estate came from the Lindsays to the Prestons, and on its summit is a statue of the Trumpeter of Fyvie, which is the subject of a well-known Scotch ballad. The Meldrum tower was added by Alexander Seton, who was made Earl of Dunfermline by Charles I. in 1596, and the Gordons subsequently erected the third tower in 1726. Like more than one Scotch castle, Fyvie possesses a chamber of horrors, which is walled up, from a tradition that indefinite trouble will ensue to the family whenever it is opened. Dunecht Castle, in the same county, is also for sale. It is a fine baronial structure, but with no traditional interest, although in the grounds is the most perfect ancient fortress in Scotland, with ramparts as regular as masonry. A third place is Mingary Castle in Argyleshire, which belonged to the M'Ians, Lords of the Isles, and where, in 1493, James IV. held his court to receive the submission of the island chiefs. The castle is not habitable, but the property around is valuable for its minerals. Kellie Castle, near Arbroath, is also in the market,—but it is modern, and has no traditional interest.

IN Kent, Hall-place, near Bexley, and on the Cray River, is advertised. For many generations it was the residence of the Halls, the last of whom died in Edward III.'s reign, after which it became the property of Lords de Despances, who devised it to Francis Dashwood in 1781. The house has some fine architectural features, in the shape of a banqueting-hall and picture-gallery. Bower Hall, near Steeple Bumstead, in Essex, is a fine old house of Queen Anne style, which was restored in 1710 by the late Sir Henry Bendyshe, bart. Llantarnam Abbey, in Monmouthshire, is a beautiful Tudor building, erected by Wyatt in 1837, on the site of the ancient Cistercian monastery founded in the twelfth century by Ap Iorwerth, and rebuilt after the Reformation. In Surrey the picturesque ruins of Guildford Castle are open to a purchaser, together with the surrounding estate. As a specimen of a Norman keep, Guildford is one of the most interesting remains in England, but of the outer walls very little remains. The keep tower is about 70 ft. in height, and the walls are 10 ft. thick, cased with chalk, flint, sandstone, and ragstone, the centre being filled with rough unwrought stones, cemented by a strong grouting. The keep is divided into three stories, and one of the chambers in the interior, probably the chapel, has some interesting wall-carvings. For all its strength, it is singular that no stirring scenes of siege or battle are associated with Guildford. Tonge Castle, near Shiffnall, is a curious erection in the Brighton Pavilion style, which, however, does not look so *bizarre* as it might do, owing to the pleasantly warm tint of the new sandstone of which it is built. This architectural creation is due to George Durant, Paymaster of the Forces in 1761, who is said to have made a very good thing of his appointment, and amassed a large fortune. There was, however, a really ancient castle on its site, which was said to be the palace of Hengist the Saxon,—and a minute representation of this old mansion is the subject of a carving over the entrance-gate.

THE election last week of Mr. Burne-Jones as an A.R.A. seems to have caused all the surprise in artistic and amateur circles which it well might cause. The primary surprise is that the Academy should elect Mr. Burne-Jones, who has never, we believe, exhibited at Burlington House, and whose ways certainly are not as their ways, either in his faults or his excellencies. The secondary and larger surprise is that Mr. Burne-Jones should have consented to be elected. His art is sentimental, it is true, and has its full share of the shortcomings incident to sentimentality in art; but it is poetic and imaginative, and what place is there for it among those rows of unimaginative and matter-of-fact works which line the Academy walls every year? Is his election a sign that a different tone is coming over the Academy exhibition? It is not too soon, though we by no means wish the prevalent tone to be that of Burne-Jones art. We sigh, however, for the poetry of art in some shape, and in one shape at least he can give it us. The election of Mr. Henry Moore, the powerful and learned sea-painter, requires no excuse, save that it is rather late in the day; but why is Mr. Alfred Hunt persistently passed over? Mr. J. W. Waterhouse has certainly good claim to recognition, but by no means so good or of so long standing as Mr. Hunt's. The election of Mr. A. Waterhouse to the full rank of R.A., which has now been accorded him, was, of course, only a question of time.

WE have received authoritative information that the reports which have been circulated (alluded to in our last) as to the possible or intended pulling down of "six, eight, or ten churches in York," are, as we supposed, absurd exaggerations. The scheme set on foot, under the authority of the Archbishop, is one for consolidating and re-arranging parishes with a view to the better working of them, and the utmost that was likely to follow might have been the removal of two churches. At present there is no likelihood of any more than one church being affected; and this from accidental circumstances. The church of St. Crux has been for some time in a dangerous condition, and the question of its removal was under discussion more than two years ago. The Society for the Protection of Ancient Buildings addressed the Archbishop, through their secretary, on the subject at that time; and the Archbishop pointed out to the Secretary that if the Society would set on foot a subscription for some pecuniary help, it would be quite possible to preserve the church. This appeal of the Archbishop's closed the correspondence. Without their aid, however, a considerable sum was raised towards the restoration; plans, &c., were prepared; and the roof of the church was removed. By this time, however, an influential committee of the clergy and principal laity had recommended, with a remarkable amount of agreement, the scheme for the re-arrangement of parishes. Upon this, the Building Committee of St. Crux, finding that under the proposed scheme St. Crux's parish was likely to be united to another parish with a large and sufficient church, whilst they had still a large sum to raise for the restoration, arrived at the opinion that they would not be able to complete their labours. They felt sure that many of the donors would rather not give their subscriptions to the restoration of a church that might not be wanted. Under these circumstances the Archbishop called a meeting of the parishioners of St. Crux, which was attended by a somewhat small number. That meeting came to a resolution that instead of restoring the old Church of St. Crux a smaller church should be erected at a moderate cost on the same site, and the Building Committee were directed to ascertain how far the promised subscriptions would be extended towards this new proposal. The Building Committee met and considered the subject, and it is understood that they resolved that they could not proceed with the undertaking, and that they would have to return the subscriptions. With this one exception, we are informed that there is no case in which a church will be removed. Only two other cases are likely to be dealt with at present, viz., the two St. Mary Bishophill Parishes and the Union of St. Mary's, Castlegate, with St. Michael's, Spurriergate. In both these cases the churches will be preserved and kept open. The most effectual mode of keeping a church open, it has been suggested by the ecclesiastical authorities, is in the hands of the parishioners. As long as they attend it in considerable numbers it is sure not to be closed.

THE statue in marble of Darwin, seated, and somewhat over life-size, which was, on Tuesday, formally accepted by the Prince of Wales on behalf of the Trustees of the British Museum, is a fine example of portrait-sculpture, and does credit to the powers of the sculptor,

Mr. Boehm. The overhanging of the brow is somewhat exaggerated as far as actual modelling is concerned, but it does not produce the effect of exaggeration in the actual result, and in the light in which the figure is placed the expression of the head is grand and powerful, perhaps more so than in the original; for artists, stirred by Darwin's fame and greatness, have on several occasions shown their desire to read into his countenance all the expression of power and genius which they think ought to have been there; and certainly, to convey the mind in the face, even more clearly than nature's realistic treatment sometimes conveys it, is a legitimate object of portrait art, whether in sculpture or painting. But the remainder of the figure raises again the question, so often raised by portrait-sculpture, whether a modern man in his habit as he lived (even with the assistance of a great-coat thrown over his knees for sculptural effect) can ever be a satisfactory object of sculptural treatment, and whether a bust with decorative architectural surroundings is not preferable. Here are the shoes in the Darwin statue, for instance; apparently old and ill-fitting shoes (for new boots would not be picturesque), with all their wrinkles and creases cut in the fine marble. Is that what marble sculpture was meant for?

PERILS of fire, as is but too well known, beset the toil of the coal-miner. The last week has shown how he is exposed to the opposite danger,—to peril by water. Not that this is by any means without precedent. The flooding of coal-mines has usually occurred from the same cause that produced the calamity at Houghton-le-Spring on the 3rd current. Water may accumulate in the empty spaces from which coal has been removed; and at times forms vast underground lakes. It often is but too probable that no accurate surveys of these workings exist, and in that case the new works may be carried on in close proximity to an unseen source of terrible danger. The reaction of a shot, or the chance blow of a miner's pick, may give passage to a jet of water which will enlarge its course with portentous velocity, and with no warning whatever. In the present case the first indication of what had taken place was a rush of gas, leading the men below to the conclusion that the shaft was on fire. This was followed by an inpour of water, which rushed through the galleries like a river. In such cases the men are at times swept before the current. In the case of one of the inbursts of the Thames into the Rotherhithe tunnel while in course of construction, Mr. Brunel was thus washed to the bottom of the shaft, narrowly saving one of the most important lives among the "makers" of modern England. In the present case, most of the men and boys underground, numbering some 120, were saved, many of them by the aid of the force of the current; but it is feared that some thirteen have been either drowned or cut off from all hope of escape by the rise of the water. As our coal-fields are rapidly being exhausted, the danger of accumulation of water is on the increase, and the importance of accurate surveys of all old workings, and of their careful study, increases daily.

AT the meeting of the Royal Institute of British Architects on Monday evening last, the large gas-burner, which usually makes the room almost unbearable, was removed, and a ring of thirty-six Swan incandescent lamps was arranged round the base of the dome. These lamps were worked from the engines and plant at the Grosvenor Gallery, from which as a centre Sir Coutts Lindsay expects in a short time to be able to distribute the electric current over a considerable area. The Goulard-Gibbs system of distribution is adopted, and two of their secondary generators were placed in a cupboard on one of the upper floors at the Institute, and the wires thence taken through the dome to the lamps, which were supplied and fixed by Mr. Verity, of Regent-street. The effect was very pleasing, and the difference of temperature from that which ordinarily prevails was most marked, but unfortunately just before the meeting commenced the driving-belt of the steam-engine broke, so that the light could not be brought into action till nearly nine o'clock, and recourse was had to oil lamps. After the belt had been repaired, the electric lamps were turned on, but as the repairs were very hurriedly executed, the speed of the engine could not be kept uniform, and the lights consequently were not steady. The accident is much to be regretted, as it must necessarily make the Council hesitate before deciding to adopt the electric light permanently; but we should hope the recurrence of such an accident could be sufficiently guarded against.

THE case of Percival *v.* Dunn, which has been recently reported, is not without interest to those who are concerned with building contracts. A, we will say, lets land to B, to build upon, and in the lease he agrees "to make advances to the lessee for enabling him to roof in the messuages . . . . in such sums and at such times as the said A shall certify in writing." B finds that he owes various accounts. Among others, he owes C some money for goods supplied, and accordingly he gives him the following note:—"Dear sir, please pay Mr. C. the amount of his account, 42*l.* 14s. 6d., for goods delivered at Park, and oblige,—B. To Mr. A." When A receives this note from C he refuses to pay the account, and C accordingly sues him for it on the ground that the note constitutes an equitable assignment of a part of the advances which he agreed to make to B. But the Court held that this note was no more than a "mere civil note by the writer, asking some one else to pay his creditor, and conferring no manner of right" against A, not constituting an equitable assignment, since it did not assign, in so many words, any fund, or any part of a particular fund. It is therefore necessary that persons who take such notes should be careful to see that they are worded accurately and clearly. If a moral is to be drawn from this case, we should say, spend 6s. 8d. on a lawyer, who will draft a note for the debtor to sign, and then you will have the money you require safely assigned to you.

IT is not improbable that an attempt will be made to place the whole of the theatres and places of public amusement in the metropolis under one jurisdiction. The Lord Chamberlain has intimated to the Metropolitan Board of Works that he will not be indisposed to relinquish his jurisdiction over theatres provided the Board will take powers to include in their supervision the music halls and other places of entertainment within the metropolitan area. This appears to be a step in the right direction. The Metropolitan Board has been for some time past the inspecting authority with regard to theatres, the Lord Chamberlain referring all matters of construction to the decision of the Board, and it seems desirable that the inspecting and licensing power should be vested in the same authority. At the present time the only means at the disposal of the Board to enforce compliance with their requirements is by summoning the offender before a magistrate,—a cumbrous and generally unsatisfactory procedure, which would be rendered unnecessary if the licensing were in the hands of the Board. The Lord Chamberlain proposes to retain the censorship of stage-plays, out of which his control of theatre buildings has arisen, and the public will probably not be disposed to grudge him the continued exercise of this "little brief authority."

THE Pergamene marbles have recently received an important addition, in the shape of a slab with the figure of a wounded giant, of very sensational appearance. The Turks seem to have been struck with the value of the slab, for they made great efforts to secure it for the Constantinople Museum,—efforts happily frustrated, though with much difficulty, by Berlin. The slab represents a giant falling towards the right, his mouth wide open, his face distorted with pain, his hair wildly dishevelled. Instead of fingers and toes, his feet and hands end in powerful eagles' claws, a new feature in the fantastic composition of giant figures. He is winged, and ends in snake-coils, like so many of his brothers. The slab acquires additional interest from the fact that it joins on to the so-called Latona slab. In the garment of Latona two deep indentations have long been observed. Into these indentations the claw of the giant accurately fits. Undoubtedly he was the opponent of Latona.

FROM Rome we hear that an interesting monumental tomb has been discovered on the left of the Via Salara, a short distance outside the gate. The top of the tomb was struck 7 ft. 6 in. below the surface; it is a large circular monument 117 ft. in diameter; and, judging from the remains of the decorations, it must have been a striking object on the roadside. Fortunately the inscription is preserved; it is in beautifully-cut letters, once filled in with red colour, on a block of white marble 17 ft. long by 3 ft. 6 in. high, and reads as follows:—

V . M . LVCILIVS . M . F . SCA . PAETVS
TRIB . MILIT . PRAEF . FABR . PRAEF . EQVIT
LVCILIA . M . F . POLLA . SOROR .

The marble cornice above the inscription has disappeared. The tomb is faced with travertine stone, with grooved joints, like the tombs of Cecilia Metella and the Plantii; and although a great portion of the travertine cornice has been taken away previous to the tomb being buried, fortunately enough remains on either side of the inscription to show what it was like. At present only as far as the base of the inscription has been cleared, but the proprietor is digging, and intends excavating the whole of the tomb.

FROM the *Philologische Wochenschrift* we learn that at Akraiphnia, in the district of Thebes, a fine statue of Apollo has been discovered, which, according to present report, belongs to the best period of Greek sculpture.

THE works required to be done to the Sir Paul Pindar Public-house, 169, Bishopsgate-street Without, which had been reported to the City Commissioners of Sewers as a dangerous structure by Mr. E. Woodthorpe, the District Surveyor, were reported to have been completed at the fortnightly meeting of the Commissioners held on the 3rd inst., and there would appear to be a chance that this picturesque building may remain for some short time longer.

WE commented before on the injustice that would be done to Mr. Seddon if the completion of his remarkable building at Aberystwith were entrusted to other hands than his own, as was at one time intended. We are glad to learn that this matter has been reconsidered, and that the Council of the College have graciously made up their minds to appoint Mr. Seddon architect for the completion of his own building.

AT Messrs. Dowdeswell's, in New Bond-street, is at present to be seen a very interesting collection of the work of M. Rajon, the eminent etcher. This includes not only a considerable number of his etchings from well-known paintings, but also examples of his work in oil painting and crayon, mostly portraiture, exhibiting a remarkable versatility of talent in the handling of various methods and materials.

FROM a local monthly magazine, published at Windsor, we learn that there is prospect, at an early date, of some much-needed sanitary improvements being carried out in one or two of the worst lanes of the town, especially Bier-lane, which is described as "a dark blot upon a Royal borough, such as Windsor." Attention was drawn to the unsanitary and discreditable state of portions of Windsor in the *Builder* a good many years ago, and we believe the Rev. A. Robins, the Rector of Holy Trinity, Windsor, has been constantly agitating on the subject, and it appears that at last something is to be done.

THE eighth annual report of the Society for the Protection of Ancient Buildings is an amusing, though somewhat melancholy, record of childish and captious criticisms against everything that everybody proposes to do to any old building anywhere, intermingled with amusingly *naive* confessions of the indifference with which their remonstrances were received, and the occasional pretty direct snub they encountered. What state of things is dear to the mind of the "Anti-scrapes" is indicated in a doleful wail addressed to them by a sympathiser at Packwood, Warwickshire, and printed with obvious approval, in which the writer feelingly laments the loss of the old church, "its broken floor, stained walls, old mural tablets . . . . the pews grey with age, the windows mended with glass of every tint," &c. It seems nearly incredible that any set of people should actually and seriously consider it a sacrilege to build a new church when the old one had come to that state; but that is the state of the "anti-scrape" intellect, apparently.

ARCHITECTURE AT THE INVENTIONS EXHIBITION.

ALTHOUGH Group III. of the Exhibition is described in the official catalogue as consisting of "Engineering Construction and Architecture," it can scarcely be said that architecture is adequately represented. The real architectural department is the Old London which Mr. Birch's skill has called into being, and which proves more attractive and charming than ever.

Lord Templetown contributes (226) a "Plan and Model of Labourers' Cottages," showing careful study of a difficult problem and a real desire to ameliorate the condition of his poorer brethren. These cottages have been erected singly, in pairs, and in rows, upon his lordship's Irish estates, and possess many noteworthy features. The ground plan comprises an entrance-porch, a good-sized living-room, two sleeping-rooms, a scullery, and outbuildings for fuel, dust, and other necessary uses. The living-room is carried up to the roof; but above the ground-floor sleeping-rooms an additional sleeping-loft is provided open to the upper part of the living-room and warmed in part by its fire. It is evident that this apartment would receive with the warmth from below much impure air, and the arrangement is one which calls for special means of ventilation, which are not shown to be provided. It would undoubtedly be an airy sleeping-place, and with a little care it could be made a fresh-airy one,—that is, if the labourers on Lord Templetown's estate are unlike all other labourers and set store by that commodity. Adjacent to the living-room fireplace is a closet contrived for drying the labourer's clothes when he returns wet from his work, the steam therefrom being taken off by a flue specially provided for the purpose. This would be a real advantage not only to the labourer but to his family, and shows a carefulness as to their welfare which calls for gratitude. If, as the farmer said at the rent dinner, "All landlords 'ud do as this one do they wouldn't so many on 'em do as they do do"! We heartily appreciate the efforts which this considerate landlord is making in behalf of his dependents, and would suggest that a second window in the living-room would make it both more cheerful and more wholesome, and that the assistance of a professional architect would, with the same expenditure, lead to a desirable improvement in the somewhat cold exterior aspect of these otherwise excellent dwellings.

Mr. Arthur Baker exhibits (291) what is described as "Model of Church, showing method of carrying Central Tower," though no model is to be seen. There is a series of very interesting drawings,—four plans, four perspective views, and two small sections. The object is to provide for the support of a central tower, while dispensing with the customary angle piers, which obstruct the view, and by the undue attenuation to which they are subjected on this account frequently prove too weak for their burden. Mr. Baker's plan consists in blocking up with a solid wall one bay of the nave arcade on each side, and turning longitudinal arches of wide span from these solid bays to companion abutments afforded by the chancel walls.* From the haunches of such arches the tower walls would rise. The section suggests a somewhat slippery pose for so heavy a mass; but criticism is disarmed in presence of the fact that the arrangement advocated has been carried out by the inventor in his church at Llanberis with complete success. A table shows the relative obstruction to a view of the pulpit by the new and the old method to be respectively ·02 and ·25, and that without a central tower the ordinary church plan obstructs the view to an extent represented by ·17. The designs by which Mr. Baker illustrates his proposals are in excellent taste, and the only fault we have to find with his scheme is the interruption of the series of nave arches, which cannot, we think, be pleasing or artistically satisfactory.

Mr. Ingress Bell shows, by a well-executed model in plaster (392) one pavilion of a proposed military hospital for a hot climate, which he has worked out upon a principal devised and advocated by Major-General Sir Andrew Clarke, R.E. The drawings of this building are being exhibited at the Royal Academy*; but a general plan is appended to the model, and shows an important and elaborate scheme. The point of the whole is the adoption of the circular form ward, the complete isolation of the accessory services, and the defence of the roof and enclosing walls from the direct rays of the sun. The circular form of hospital ward is growing in public favour, and examples of its use may be seen at Greenwich, Hampstead, Burnley, Seaforth, Gravesend, Antwerp, and will soon be *en evidence* at Hastings, where Messrs. Keith, Young, & Hall have, we are informed, a hospital on this system in contemplation.

These three exhibits may be said to exhaust the list of those which come under the head of architecture. Of building materials,—constructive, decorative, and otherwise,—there is no lack. Concrete building is copiously represented, and it is evident that this form of construction is exercising the ingenuity of many minds.

Mr. G. H. T. Beamish, A.M.I.C.E. (238), shows an improved method of construction with concrete or other blocks, arranged in such a manner as to admit of vertical settlement without lateral derangement. The blocks are cast in I and T sections and are arranged to interlock. There is no longitudinal bond, but the resistance to cross strain is considerable. It is not stated whether the plan has been tested in practice, but there seems to be no reason why, with certain precautions, it should not be effectual under particular conditions.

Another form of concrete construction for ordinary occasions is shown by Messrs. Frank & James P. West (278), who construct thin slabs of fine concrete, which, when set edgewise on the outer and inner faces of the wall, and keyed to its body, take the place of the movable wooden boarding used by Mr. Tall in his original system of concrete building. The slabs in question are about 1 ft. 6 in. long, 1 ft. high, and 1½ in. thick, the inner one would be roughened for plaster, or left smooth and painted. The cost of the slabs would be about 1s. 6d. per square yard. The chief recommendation urged in favour of concrete building is its reduced cost, but it is doubtful whether in walls of 1 ft. 2 in. and less thickness, the saving would be at all considerable. Messrs. West's plan would make a good wall, quite impervious to moisture, and very durable; and as the facing slabs may be self-coloured in various tints, the possibilities of a pleasant arrangement of coloured surfaces might, in skilful hands, be turned to good account.

The Croft Adamant Co. (272) send specimens of enriched mouldings, friezes, and plaques, of good character and design. Granite chippings are the basis of the material, which is said to be hard enough for paving, and yet may be sawn and cut with a chisel; non-absorbent; capable of being made in any size and shape; and cheaper than York paving.

Homan's "Simplex" fire-proof flooring (277) is a variation of the ordinary concrete floor with rolled joists imbedded therein, the peculiarity of which is the possibility of nailing the floor-boards directly upon the concrete. This would certainly give a damp-proof and firm flooring, and would no doubt possess many advantages over the common hollow and unsatisfactory construction. The under surface would be roughened as a key for the plaster; lathing and rendering would be saved; and, from the absence of resilience, the ceiling would be less likely to crack or fall than is now unfortunately the case. Inventors are, as a rule, not sufficiently explicit on the question of cost. In this case it is said to be "about" the same as the ordiinary construction; but it is probable that the excess of cost would, in fact, be sufficient to render its adoption in ordinary cases impossible.

The patent Mycenian Marble Company (271) have an attractive exhibit of a sort of improved scagliola, in which various marbles are imitated with varying success. The prospectus is as florid as the "exhibit," and neither is in the very best taste. A neat little compliment to "modern architects" who are said to be "not less artistic than those of the time of Pericles" is judicious, perhaps, if not strictly true. Every virtue is claimed for the patent Mycenian marble. It would answer for music-halls and restaurants, and certainly has some advantages over the fashionable wall tiling used for such purposes.

Of inventing sash-fasteners there is apparently no end. A great variety is here presented for the perplexity of the curious visitor. They are all very good, and it is hard to say which most perfectly fulfils its object. Gardner's patent, No. 298, is certainly amongst the best. The scientific burglar, as he walks the show and listens to the artless tales of the inventors of these articles, must smile at the confidence which they profess as to the certainty with which that gentleman's endeavours will in future be frustrated. He is generally credited with no ideas beyond the slipping of a knife between the meeting-rails, and if this manœuvre can be foiled, the inventor is satisfied that his victory is complete. With what a bland expression of face would the late Mr. Peace have listened to these simple souls, and how sweetly would he have congratulated them on their successful ingenuity!

Various also are the devices for hanging the modern guillotine sash and for removing the same for cleaning it from the inside. Mr. John Carter's patent (290) balances the one sash against the other, and so dispenses with our old friend the "deal-cased frames." By removing the inside bead, which is screwed to the frame, the sash can be removed, as the inventor deftly illustrates to all who will oblige him with their attention. Many incidental advantages are claimed, and if they do not all of them strike an outsider so forcibly as they appear to strike the inventor, they are, nevertheless, numerous enough to encourage architects and builders to a trial of his sash.

Messrs. W. B. Simpson have a tasteful little stall (276) showing the applicability of their decorated enamelled plates to ceilings and walls, and very pretty, very cheap, and very clean they are.

One of the most interesting exhibits is that of Mr. George Bower, of St. Neots, who shows a variety of metal articles (198), both useful and ornamental, treated by the Bower-Barff process for preventing rust, a treatment which has proved entirely successful and ought to become universal. The castings are well designed and of excellent quality.

Before closing our remarks, we would observe that a diligent examination of the various prospectuses which it has been our duty to peruse leads us to the conclusion that there is an opening for young gentlemen of literary talent and aspirations in the compilation of these very useful documents. An invention may be recommended to notice or made ridiculous by the terms in which it is brought before the public. The statement about it should be short and clear,—should not be ahead of the facts,—and, above all things, should not "werge on the poetical." We have, however, noticed that these pretty leaflets sometimes fail in almost every essential: they are diffuse, vague, outrageous in the claims they prefer, and sometimes unintelligible. A sanitary building block is said to "possess *artistic* features of the nicest *exactitude and truth*," that it "*combats* the ravages of the elements," and, moreover, that its durability is greater than that of stone, "*having less weather-resisting properties*"!

Another glowing eulogium awakes in the reader slumbering memories of "English as she is spoke," claiming for a certain decorative material "all the hygienic qualities previously referred to for themselves." We abstain from illustrating this matter further, merely suggesting that a Saturday Reviewer might find in a chance collection of these little pamphlets matter for an amusing article. But, seriously,

* This is only carrying a little further, in fact, the expedient adopted by the Normans at Tewkesbury and elsewhere.

* Some illustrations (including plans) of the proposed building were given in the *Builder* for May 9 last.

the inventor who spends a hundred pounds or so on a patent, and who is not necessarily as skilful with his pen as he is ingenious in contrivance, might do worse than lay out a guinea in the employment of a scholar to set down with as much modesty as cunning the real advantages of the inventor's achievement.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

PRESENTATION OF THE ROYAL GOLD MEDAL TO DR. SCHLIEMANN.

THE last ordinary meeting of the session was held on Monday evening, Mr. Ewan Christian, President, in the chair.

The decease was announced of M. Théodore Ballu, of Paris, Hon. Corresponding Member. M. Ballu was one of the eight Architect Academicians, and won the Grande Prix de Rome in 1840. He was known to have restored several Mediæval churches, but would be best remembered as the architect of the Trinité in the Place de Chaussée d'Antin, and as joint architect with M. Deperthes of the Hôtel de Ville, Paris.

Several donations of books, together with money donations, to the library were announced.

Professor Kerr submitted a proposal for conducting the higher operations of the Institute by means of four standing committees, taking charge respectively of four departments,—of Art, Science, Literature, and Practice,—and asked the Council to appoint a special committee to consider the question during the recess. He said,—In the stately language of our Charter of Incorporation, there is assigned to us as a primary duty "*the advancement of civil architecture*" as "*an art esteemed and encouraged in all enlightened nations*": everything short of this supreme purpose is but the inconsiderable commonplace of daily maintenance, the narrow things of the house. I submit that we are chargeable with having forgotten this duty. True to an instinctive feeling, the profession, both within and without, has of late years manifested a certain uneasiness in consequence. Hostile critics have gone so far as to tell us, if with sarcasm, not without sincerity, that we have permitted ourselves to degenerate into a trade union. This, at any rate, we have had sufficient spirit to deny; but certainly it has to be acknowledged that we are at this moment contemplating, under pressure, material reforms in our constitution. The recommendation I beg leave to offer is in direct harmony with this accepted movement. I presume to think that it will not be enough to introduce, in accordance with the spirit of the age, a more liberal or more popular administration for our corporate service; but that we ought to seek to discover also some broader basis for our organisation at large, whereby to facilitate the performance of these public functions which attach to the imposing name we bear, and to the glorious traditions of historical art and science which we therefore represent in this great nation and this great age. The academical work of the Institute to which I refer may be classified, of course, in various ways; but I think one of the most convenient forms of departmental division may be this:—(1) *Architectural Art*, the province of Taste; (2) *Architectural Science*, the natural philosophy of Building; (3) *Architectural Literature*, past and present; and (4) that miscellaneous field of private business which is commonly designated by the phrase, *Architectural Practice*. My proposal goes far enough if it goes no farther than this,—that these four departments of the higher work of a Royal Institute of British Architects should be carried on systematically by means of special machinery. For the sake of a little more completeness, but without going into detail, I will suppose that the Department of *Art* might accommodate archæology also; that the Department of *Science* would be concerned not with construction only, but with all scientific problems which affect building operations; that the Department of *Literature* might deal with the Library, and perhaps conduct with advantage a certain portion of our foreign intercourse; and that the Department of *Practice* would not exclude the important and somewhat neglected province of professional etiquette and *esprit de corps*. Perhaps it might be matter for debate if I were to rely upon the principle in the abstract, that the most effectual mode of dealing with such great public aims as I have indicated is to enlist the energies of the many rather than the few; but I may at any rate claim special consideration for such a policy in our own case, when I ask you to bear in mind that in the everyday exercise of our profession we are all so habitually engaged in the transactions of important affairs that no class amongst us, and, indeed, no individual, can be supposed incompetent to participate in the public service of the guild. For, indeed, there is no other profession whose practitioners, as I have often ventured to say, so efficiently combine the qualifications, — sometimes antagonistic in their essence, — which spring from the cultivation of the graceful accomplishments of art, the severe logic of science, and the worldly wisdom of business. Permit me to suggest further, if only as the conclusion drawn from my own experience within these walls, that it is to the great mass of the members that I would entrust the cause of progress, and not to those alone in whose riper years repose has taken the place of enterprise. I beg leave to suggest, therefore, that it would be expedient to appoint, through the Council, on a comprehensive and representative basis, a special committee of inquiry, to consider during the coming recess the general question of the organisation of the Institute for its higher work in what our charter calls the *Advancement of Architecture*. Personally I am of opinion that the best organisation may be found in the judicious employment of departmental committees for art, science, literature, and practice respectively, each having its own honorary officers and its own departmental action, and each being under the necessity therefore of accounting for its stewardship. Whether such an organisation should be established upon the simple principles of the existing by-laws, or upon any improved system to be introduced into the proposed supplementary charter, it is not now necessary to inquire. Neither is it worth while at present to discuss the scheme of departmental classification which I have tentatively suggested. Nor would it, indeed, be desirable to lay down beforehand any precise line of investigation. All I propose is that the investigation should be entered upon; and I am bold enough to believe that the conclusions which would be arrived at, applying directly, as they necessarily would, to the question how to exercise the more elevated functions of a national architectural guild with dignity and efficiency, might at the present moment do more than anything else to enable the Institute to command the confidence of the profession and of the public.

The President promised that this should have the consideration of the Council.

The President then rose to present the Royal Gold Medal to Dr. Henry Schliemann, F.S.A., Hon. Corresponding Member, who attended for the purpose of receiving it. The President said:—Dr. Schliemann, the medal which I am to have the honour of presenting to you this evening is the highest distinction in the power of the Royal Institute of British Architects to bestow. It is given by our Patron, the Queen, but her Majesty entrusts to us the task, sometimes a very difficult one, of deciding, subject to the Queen's final approval, on the man most worthy to receive it. I say that it is sometimes a difficult task, not from paucity of men, but rather the contrary, because this Institute, having always taken, as I think wisely, a catholic view of its responsibility, has included within its scope of vision not only architects, archæologists, and men of science at home, of whom there is no lack, but has also looked widely abroad, and invited to share with their brethren here of like pursuits with themselves the noblest and best amongst the learned men on the Continent of Europe. In the roll of Gold Medallists will be found the honoured names of men of Italy, of France, and of Germany, — great architects, learned writers, and archæologists; and this Institute is proud to associate with that of the great Assyrian explorer, Austen Henry Layard, the now world-renowned name of Henry Schliemann. In you, sir, this Institute recognises not only the indomitable explorer, but the earnest student of the arts of past ages,—one whose youthful imagination, having been fired by the grand story of the great poet of antiquity, has shown so powerfully that noble enthusiasm which "scorns delight and lives laborious days," that dogged pertinacity so delightful to all true Englishmen, which, having once fixed the mind on the performance of an arduous task, never wearies until it has been finally accomplished. Few things that I have read of late years have interested me more keenly than the simple tale of early struggles in the pursuit of knowledge under difficulties which you, sir, have given so freely to the world; a history of obstacles met only to be vanquished,—of determination to learn, under all circumstances, however disadvantageous, everything that could aid you in attaining what you have made the object of your life, the solution of the long-vexed question as to the existence and position of ancient Troy. It is a story such as in these days of luxury and self-indulgence deserves, for the admonition of our youth, to be written in letters of gold,—one that would teach them, if anything would, that success, to be real, must be the product of resolute hard work, and that nothing is denied to well-directed labour. That indefatigable industry such as yours, employed in the pursuit of commercial enterprise, should result in the acquisition of wealth is no uncommon thing; but that that wealth, so laboriously and honourably obtained, should without stint be freely expended on the realisation of the early aspirations of enthusiastic youth is a very rare and noble thing, and a most valuable lesson to all who are wise enough to ponder, or have the generosity to practise it. I will not venture to detain you, sir, or this meeting, by speaking in detail of the great work you have been able to accomplish towards settling the controversy to which I have already alluded, which has so long occupied the minds of many learned men like yourself Homeric enthusiasts; a controversy resulting in conflicts almost as dire as those we read of between the Greeks and Trojans of old. Your labours in this direction, and in the discovery of the Homeric tombs at Mycenæ, with the wealth of gold and bronze ornaments which were then brought to light, and your exploration of the remains of the Treasury of Orchomenos, have added a new chapter to the artistic history of Greece, the full value of which has perhaps not even yet been realised by archæologists, but the importance of which can hardly be over-rated. Of your labours at Tiryns, and the discovery, within the circuit of its well-known and long-celebrated Cyclopean walls, of the pre-historic palace, possibly older than anything at Mycenæ or Troy, but still retaining its wall-paintings and decoration, we know enough to make us look forward with lively interest to the publication of your forthcoming work, which we cannot but believe will add to the fame you have already acquired, as one of the most liberal, undaunted, and successful labourers in the investigation of the unrevealed history of the past which this century has produced. Sir, I congratulate you very truly and heartily on the success you have attained, and with all humility, and yet with pride, rejoice to be the medium of presenting you with this medal, the well-earned acknowledgment of the distinction you have so honourably acquired by your disinterested labours. (The President's remarks were received with much applause.)

Dr. Schliemann, in reply, said:—Mr. President and gentlemen, I receive with profound gratitude the Royal Gold Medal, and am exceedingly proud of it; the more so as it is conferred upon me by her Majesty the Queen, at the solicitation of the Royal Institute of British Architects, and because this most distinguished body more than eight years ago elected me a Corresponding Member. I feared at the time that this high distinction was quite undeserved, but nevertheless I felt very much flattered by it, and have done ever since everything in my power to show myself worthy of the office. Not being able to accomplish this by new inventions in modern architecture, which British genius has brought to the highest pitch of perfection and excellence, I thought I could not do better than to use my pickaxe and my spade to make some new discoveries in the architecture of the Homeric age, and to solve the architectural problems which had puzzled the wisest architects of all ages. In fact, our knowledge of the prehistoric architecture was very deficient, our sole informant being Homer, whose scanty information regarding the construction and the internal arrangement of the Heroic palace, was open to question. But I venture to hope that my discoveries and excavations of the great prehistoric palace of the ancient kings of Tiryns, the galleries in the walls with their eleven large ogee-like chambers, and the three chambers we have lately discovered in the

towers, will contribute greatly to explain to us the Homeric description. Mr. President and gentlemen, I beg you once more to receive the expression of my profound gratitude. (Dr. Schliemann resumed his seat amidst loud and continued applause.)

The President then presented the various prizes to the students and others who had won them.

The Pugin Travelling Student, Mr. William Henry Bidlake, B.A., receives his Medal, together with the sum of 50*l.*, at the completion of his tour, and only after depositing his sketches, &c., made during the tour. A similar rule applies to the holder of the Godwin Bursary, Mr. Bradshaw Gass, Associate.

Two medals of merit, in connexion with the Pugin Travelling Studentship, were awarded, the recipients being Mr. Herbert Osborn Creswell and Mr. Thomas Maclaren.

The Soane Medallion, with 50*l.*, to be afterwards paid under the usual conditions, was awarded to Mr. Arnold Bidlake Mitchell. In presenting the medal the President said that the work done by Mr. Mitchell had been of the most creditable kind, being a design for the best description of municipal mansion. The plan was a most excellent one. There had been a good deal of heresy lately as to the desirability of one man designing the plan and another the elevation of a building, but unless a man, when designing his plan, could see the elevation he was going to produce by the combination of his arrangements, he was only half an architect.

In the competition for the Soane medallion, two medals of merit were awarded, the first to Mr. Alfred Arthur Cox, and the second to Mr. John Thomson.

The Tite prize of 30*l.* and a certificate were awarded to Mr. John Archibald Campbell.

The Institute silver medal with ten guineas, for measured drawings, was taken by Mr. Ernest Albert Coxhead. It is usual only to present two medals in this competition, but such excellent drawings had been submitted that the Council had decided on this occasion to present four medals and one certificate of honour. To Mr. James Cromar Watt a medal of merit and ten guineas were therefore awarded, while Mr. John Holmes Greaves and Mr. Arthur George Adams took medals of merit, and Mr. Thomas Locke Worthington a certificate of honour.

Mr. Charles Barry then formally asked the acceptance by the Institute of a portrait of Mr. Horace Jones, painted by Mr. Frank Holl. Mr. Jones, he said, was one of their oldest as well as most honoured members, and was, he believed, one of the original few who really founded the Institute. He went abroad in 1841, accompanied by men of his own age, and whose names, like his own, had since become famous. His early career was a successful one, one of his first known efforts gaining the competition for the Town-hall and Law Courts at Cardiff, followed by a great many works of varied character.* In 1864 Mr. Jones was appointed to the honourable office of Architect to the Corporation of the City of London, which office he had served with distinction and credit, leaving his mark on several very important buildings. The present handsome roof of the Guildhall was due to Mr. Jones, replacing a flat and unornamental ceiling by a work of great merit. The same might be said of the new library at Guildhall. Mr. Horace Jones would also be known to posterity by the long line of markets, which were thoroughly well conceived, and had become models for markets all over the world. One of his most recent works was the great Council Chamber of the City of London, which was of very distinguished merit. Mr. Barry also touched upon Mr. Jones's large and successful experience of compensation and valuation cases, and his connexion with the acquisition of Epping Forest. The number of subscribers to the portrait fund was 124; the list was still open, and would afford the opportunity for making a more tangible present to Mr. Jones. Mr. Barry added that Mr. Holl had expressed his interest in the work of the Institute, and he would ask them to enrol that gentleman amongst their Hon. Associates.

The President, in accepting the portrait, referred to the fact that Professor Hayter Lewis, Mr. Horace Jones, and he were the only survivors of a party of friends who, forty years ago, trudged across the Campagna, and studied together the great works of Rome. The portrait did not exactly portray the young figure which he remembered then, but it gave the same face, though with the body of the substantial City magnate, which had accompanied him through life as his very good friend.

Mr. Aitchison, A.R.A., next proposed a vote of thanks to Mr. Holl, which was carried by acclamation, and responded to by the recipient.

Mr. Thomas M. Rickman, F.S.A., Associate, then read a paper entitled "Professional Lessons from a Boulder: a Plea for Geology as Part of an Architect's Education," of which the following is an abstract:—The author described a particular boulder on the beach of Cardigan Bay, near the old Castle of Criccieth. This boulder, besides having been split, had been roughly shaped by Nature, had been weathered, coloured by the salt and spray, the lichen, the moss, and the sea-birds. It was there to tell many things; for all form and all colour, too, were history, if we would but read it. Should it be said that the mere outline of a stone could but give results, whilst the outline of a building reveals a purpose, the objector might be reminded of the form of every shell found in stone as adapted to the continuation of the species of animal once inhabiting that shell. The series of outlines, all to scale, parallel to the hinge-joint of a bivalve mollusc, and not less the continuous lines radiating from the hinge, the same in infancy and through later stages of growth, every one of them was the development of the meaning of the form, like the delicate mouldings of a mullion curving through tracery. Let any architect study for awhile the serried outline of such a shell, with every change of form and size in its life's history marked in the clearest manner, and he would learn a lesson in the adaptability of curves and shapes which would bring him back to the design proper for his mouldings, should he ever have been tempted to go astray. So, again, should he compare the devolution of allied genera, in the matter of form, according to climate and life environment, he will come back, not uninstructed, to the use of his timber, brick, sandstone, limestone, marble, iron or granite, but with the feeling that he has picked up ideas which it will be his business to turn to good account. By studying the forms of orthoceras, ammonites, and such newer births of geological time as the nautilus; by taking note of their mode of growing straight or curved, or in coil, open, close, or involved, the outward form always corresponding with the position of the internal air-channel, the early year's growth of the individual still seen in the eye of the perfect and full-grown volute, the mode shown in which the internal coil bursts into the wide outer rim, the last formed aperture appearing in the natural termination of the antecedent convolutions, the professional aspirant would come back to his task of designing any curved architectural form with his eye refreshed by the sight of outlines full of meaning for him, and would not dare draw for the purpose of execution in stone, in wood, or in plaster any unmeaning shape. Let the architect contrast the elements of form to be seen in the bivalve shell and its hinge with those exemplified in the univalve on the one hand, and with those to be found in the multicellular shell on the other, and he will not fail to recognise distinctions of principle as great as can be traced in Classic architecture of the most trabeated style, or in Gothic, the most arcuated. Nature's mode of working, said Mr. Rickman, was not like the plasterer's zinc mould horsed upon a straight-edge. The mould which shaped the shells was the soft pulp of the living animal in its perfect state, and repeated ever with more and more significance, and with a set of different sections, but all fitting the mould. And from such studies of nature the architectural instinct would come back to the examination of an antique building, and would penetrate the purpose of the designer. That purpose would be divined from the privacy of the dwelling, the indispensableness of the castle's inviolability, the worship celebrated in the church. The problem would be studied in the light of the proved political condition of the country, the cleanliness or filthy habits of the population, the current modes of offence and defence, the depth of the people's devotion. All these helped to clear up the artificer's aims. The history of a country was more to us than dates and names, and so the metamorphosis of an orthoceras into a nautilus conveyed to the mind ideas far greater than those of mere changes in stratification. To an architect the study of these changes revealed the growth of motive and the history of form. Such researches made him an engraver of the annals of his race. By seizing on the clues thus furnished by Nature the course of architectural style would follow in the footsteps of political and race history, and architectonic forms would tell of the religion which had influenced the lives of the profession and its clients. Progress or retrogression in our buildings would be the test of the education of the time. Whereas stones were mostly shaped by forces which it is the architect's business to control, the history of a boulder might help architects, not only in the criticism of old buildings, but of their own works also, and so help in the formation of a really original style. The essayist urged that natural sciences, and especially geology, might fill the place for an architectural *curriculum* of the study of a dead language. Geology and language were each to be valued as a phase in the deliniation of thought, of purpose, and of mind,—language for the man of the day, geology for the architect, whose works were to tell to later eyes their own stone history.

In the discussion which followed,

Mr. I'Anson proposed a vote of thanks to Mr. Rickman. To the geologist whose mind was full of his subject, every stone was fraught with a wonderful history, and the lecturer had applied some of the lessons he had learned to the science of architecture. He would like to call attention to one piece of architecture which illustrated the history of past times, viz., the Temple of Serapis at Pozzuoli. Those who saw its stately columns could read the history of the extraordinary geological and volcanic changes which had taken place in the neighbourhood. These columns had evidently been from 15 ft. to 20 ft. below the sea, as the shells were embedded in them. The stones had been raised and sunk several times, and a history of these changes would be found in Sir Charles Lyell's works.

Professor T. Roger Smith, in seconding the vote of thanks, drew attention to the literary quality of the paper, which had struck him as being of a very high order. He had had the opportunity of reading the paper and of trying its methods, and he would like to recommend to those who sometimes attempted to analyse ancient or modern buildings, some of the suggestions which had been made as to the questions to put to a building with the view of getting such answers as might reveal a little of the mind of the designer and the skill of the constructor. He had lately tried some of these upon a famous London building, with results which, if there were time, he would put before the Institute. At that late hour, however, he would confine himself to seconding the vote of thanks.

The President said that the paper had reminded him of the old story of "Eyes, and no eyes." Mr. Rickman was clearly one of those who made use of his eyes, and, while wandering on the shore in search of health, found "Sermons in stones, and,"—no doubt,—"good in everything." He concluded by quoting an eloquent passage on stones, from Mr. Ruskin's works.

The resolution was then put, and was cordially received.

Mr. Rickman replied, and referred to the pleasure he had experienced in studying boulders since his first introduction to one by Professor Roger Smith, in front of the hotel at Keswick.

The meeting then proceeded to elect the following members:—

As Fellows.—Mr. William Salway, Associate, of Melbourne; Mr. Horace Cheston, Associate, of Great Winchester-street; Mr. Keith Downes Young, Associate, of Southampton-street, Bloomsbury; Mr. Samuel Flint Clarkson, Associate, of Great Ormond-street; and Mr. Samuel Musgrave, Associate, of Hull.

As Associates.—Mr. James Ledingham, of Bradford; Mr. Edgar Wood, of Middleton, Manchester; Mr. Norman Spencer, of Wilmslow, Cheshire; Mr. Paul Ogden, of Manchester; Mr. Harry Anderson Paley, of Lancaster; Mr. George Benson, of York; Mr. George Penrose Kennedy Young, of Perth; Mr. Archibald Taylor Ellison, of Queen Victoria-street; Mr. Robert William England, of Christchurch, New Zealand; Mr. Samuel Perkins Pick, of Leicester; Mr. Thomas Charles Yates, of John-street, Bedford-row; Mr. John Eaglesham, of Ayr;

* Among his principal early works may be named the Surrey Music Hall (afterwards destroyed by fire); Mansion, Caversham Park, near Reading; the Telegraph Office, Threadneedle-street; and the Sovereign Life Office, corner of Piccadilly and St. James's-street.

Mr. Henry Berney, of Croydon; Mr. Norman Clayton Hadlow Nisbett, of Euston-square; Mr. John Watt, of Upper Norwood; Mr. Alfred Arthur Cox, of Queen's Gate, S.W.; and Mr. William Edward Willink, M.A., Cantab., of Liverpool.*

THE CONGRESS OF FRENCH ARCHITECTS.

WHEN these lines appear, the Congress of French Architects will have completed its thirteenth session, under the presidency of M. Questel, member of the Institute. We are obliged to defer to the next number the account of the main portion of the proceedings, and confine ourselves now to noting briefly the work accomplished during the earlier portion of the week.

It was on Monday, the 8th, that the Congress held its first sitting in the Hémicycle des Beaux Arts. This meeting was devoted to the election of the council and of the committees entrusted with the examination of certain questions of professional interest: public competitions, the code of professional charges, artistic copyright, responsibility in relation to public works, road construction, and sanitation were the subjects of these reports, to which we shall return. After this preliminary business, M. Hardy read an interesting paper on "The Architecture of the Salon of 1885," a subject which we need not follow up here, as it was treated of at some length in the *Builder* a few weeks back. The same day the Congress betook itself to 20, Rue Bergère, to the "Imprimerie Centrale des Chemins de Fer," founded, in 1849, by M. Napoleon Chaix, and the working of which occupies the hôtel built by the fermier-general, Lenormand de Mezières, under Madame de Pompadour. These well-organised printing-works employ 700 persons, and fifty printing and lithographic machines, among them a special press for the printing of posters, the largest which exists in France. To the printing-house is annexed a professional school for the instruction of apprentices who are afterwards to become workers in the establishment.

The next day the Congress was invited to visit the archæological excavations in the Louvre, undertaken beneath the Salle des Caryatides, that of the Venus de Milo, and that of the Melpomene. It is to the late M. Lefuel that we must credit the initiation of that interesting piece of work, which was not, however, interrupted at his death, but has been continued for the last three years under the able direction of his successor, M. Guillaume. It forms a kind of completion to the excavations undertaken by the Municipality of Paris in 1866, and which allowed of the indication, by means of a line drawn on the ground surface of the Cour du Louvre, of the perimeter of the ancient substructures. Thus, one can now follow in their successive stages the transformation of the parts constructed by Philippe Auguste, St. Louis, and Charles V.

It is exceedingly difficult to give any account in detail of this long subterranean peregrination, in the course of which M. Guillaume successively showed the old walls and glacis where the Jardin d'Infantes now extends and which the river water formerly washed; the columns, with their fine lines, discovered in the alterations of the surface; the portions of the vault ornamented with grotesque heads; a vast piscina excavated not far from the sewer leading to the Seine, where one may still see a figure of a warrior curiously carved in stone; and, lastly, the fragments of paving, in terra-cotta, of the XVth century, with ornaments and figures identical with those which were found, in 1876, in the Hôtel de Jean sans Peur.

We cannot now reproduce the lecture given, as a sequel to that excursion, by M. Ledrain, custodian of the Assyrian Antiquities at the Louvre. The subject was "Les Monuments Sumériens et les Rois Architectes de la primitive Chaldée," especially Goudéa, of whom there are seven statues in the Louvre. These statues which, according to the inscriptions translated by M. Ledrain, date from 3,900 years B.C., are of high interest in regard to the origin of architecture, for one can see, very well engraved, the plan of a palace which is almost identical with some actual designs, and one of which bears a scale, the dimensions of which approach extraordinarily near to our metric linear measures. With much learning and spirit, the lecturer revived before our eyes the constructions built by Tel-lo on the banks of the Euphrates, and the remains discovered by M. de Sarzec, French Consul at Bassorah.

Two other lectures terminated the second day; one of M. Marcel Deslinières on "Céramique," the other by M. Coquet, architect, of Lyons, who led his hearers through the Moorish archæology of Spain.

On Wednesday morning the Congress met at La Villette, to visit the abattoirs constructed in 1865-67, by the late M. Baltard, whose work was worthily completed by M. Janvier, who himself died in 1879. The abattoirs at La Villette, which have replaced the analogous establishments scattered throughout Paris, cover an irregular surface of nearly fifty acres, and the buildings cover about 58,000 square mètres. The general aspect is rather imposing. The façade towards the Rue de Flandres shows a grille about 20 mètres interrupted by pilasters intended for allegorical groups. From the principal front six large avenues radiate, intercepted by smaller cross ones. All the buildings have Cronij stone dressings with filling of rough-dressed masonry or of brickwork. The partition-walls are in hard brick covered with Portland cement. The floors are of iron, covered with plaster and bitumen, the roof entirely of tiles.

To give some idea of the importance of the abattoirs and of the service they render, we may add that the work of the establishment occupies 150 slaughter-houses contained in eight groups of buildings; that the dwellings for butchers and shepherds, &c., occupy ten blocks of buildings, and that the stalls can allow space for 2,000 oxen, 7,000 sheep, 2,700 pigs, and 2,000 calves. Each year there is some new improvement in the general arrangement. Now it is a special railway to be made around the line of enclosure, communicating with all the other railways radiating from Paris to the provinces; now another suspension railway is constructed for the quicker circulation of the meat, &c. Further on, three large pavilions are occupied in roasting pigs by gas; not to speak of other structures for the cleansing of offal, the triperies, the blood store, the extraction of albumen and animal oil, the preparation of calves' heads and sheep's feet, &c. For the purpose of having everywhere the indispensable element of cleansing, water from the Marne and from the Ourcy is received into sixty iron reservoirs which project into the establishment at all points.

This is not all, for when the buildings are completely finished they will cover a space of of 87,000 mètres, and contain 311 slaughter-houses, of which 179 only are at present in work. The works have cost up to this moment about 16 millions (francs); about 7 millions more will be required to complete them. The cattle market, which forms the complement to the abattoirs, and opens on the Rue d'Allemagne, was commenced in 1867, and has cost about 19 millions. We are indebted to M. Moreau, the present architect for the abattoirs, for the information furnished on the occasion of this visit.

In another article we will speak of the lecture given the same day by M. Perrot, member of the Institute, on the "Temple of Jerusalem."

GAS AT THE PARKES MUSEUM.

THE Exhibition of Domestic Gas Appliances at the Parkes Museum, for an inspection of which invitations were issued for Saturday, is in reality an exhibition solely of the exceedingly useful inventions of Mr. Fletcher, of Warrington. The exhibition has not, therefore, the wider interest attaching to a general display of the works of many minds, and it presents none of the critical aspects of comparison. But it has the one advantage of being a unique collection of goods of highest repute, crowned by gold medals and other awards by many international and other exhibitions, and of classes of articles of extensive and wide-spread use.

The star-burners, the concentric burners, the radial burners, are familiar objects in shop windows, and are universally accepted as exceedingly handy and useful; and the various less familiar modifications, such as those adapted for soldering irons, hatters' irons, laundry irons, and the drip-proof burner for glue-pots and liquids liable to boil over are in great demand for their special purposes and applications.

There is another purpose to which gas heating is extensively applied, that of boiling water, and for this service many ingenious devices are shown. Of these, the most noticeable from its small size and its efficiency is the small instantaneous water-heater, formed by a cylindrical perforated burner, surrounded by a coil of twenty or more volutions, through which the cold water flows, under the influence of the gas flame, for the whole length of the coil. Thus, say, that the length of the burner is 12 in., and the diameter of the coil 3 in., the length of the pipe in which the water is heating in its passage past the flame will be, roughly, about 9 ft. It is easy, therefore, to see how water may enter at one end of the coil cold and go out at the other end hot. A very simple and perfect little instrument of this kind is shown, formed of a straight horizontal burner of about the above dimensions, for attaching to the walls of lavatories and other places where small quantities of hot water are frequently or occasionally required. The like principle of a coil is applied to the interior of the larger boilers for restaurants and hotels, around which in those cases the flame or hot air circulates freely amongst the volutions of the coil. There are also large hot-water vessels heated by the star and radial burners from below. The small coil articles, however, have a most attractive appearance, and are designed with that forethought and intimate knowledge of requirements which characterise all Mr. Fletcher's inventions.

Another very useful article remains to be noticed amongst the smaller goods,—the coffee-roaster. The atrocious manner in which coffee is commonly prepared needs an almost universal remedy, and the hope cannot be suppressed that these little instruments may have a very wide employment. In sizes they are made from that equal to roasting from 2 oz. to ½ lb. up to a large size for hotels for roasting from ¼ lb. to 1½ lb. A quarter of a pound may be roasted thus in four minutes, and a pound in eight minutes, and we were assured by the attendant who showed the goods that a saving of 4d. per pound would be effected by the apparatus,—a strong recommendation to housekeepers.

Two other different applications of gas to its natural purpose of heating, — for cooking apparatus and for stoves for heating rooms,— are represented by many well-considered productions. The cooking-stoves are of excellent design, and the lecturer on cookery at the Parkes Museum speaks most approvingly of their practical application. Gas for cooking, however, is not popular with domestic servants, and gas stoves in the kitchen are even strongly disliked. But the objection to them is in the largest degree that there is no fire to be seen. The watching of the flames and glowings of a coal fire has universal attraction,—even dogs enjoy basking in the warmth of its rays and in its wavering light. For them, no more than for servants, does the gas fire seem to complete the appearance and the comfort of home. It is the same in all classes of society. The open grate and the coal or wood fire is the symbol as well as the reality of home. And although Mr. Fletcher produces excellent stoves with asbestos fibre squares of unexceptionable quality, it is only for temporary purposes that such stoves have as yet in the world any actual occupation. They are very convenient in reception or other rooms, where visitors are intermittent, or occupation exceptional. They are also very handy at particular seasons, as late spring, or in autumn, when cold days interpose with warmer weather; but the gas fire for sitting-rooms and for bedrooms, in the present circumstances of the gas itself, is distinctly not a sanitary arrangement. That fault, however, is not separable from the gas companies. Nor can Mr. Fletcher do better until he can get gas, or, more correctly, pure hydrogen. For it is the pure hydrogen that is required for heating, and not the mongrel compound carburetted hydrogen supplied for lighting purposes. The carbon deteriorates the gas for all heating purposes. It is the source of smoke and of fumes, and neither cooking nor domestic heating can be properly effected when such impurities arise. To avoid them requires under present circumstances very careful manipulation. For cooking, gas should indeed be the most perfect fuel. Its quantity can be perfectly regulated: its combustion equally perfectly assured, and consequently the exact temperature can be applied with

* All the gentlemen elected Associates have passed the Obligatory Architectural Examination.

unvarying certainty for any period of time, or the temperature can be raised or lowered in any way desirable. There is no waste of fuel. There is no time occupied getting up a fire, as with coals, nor any further time taken in letting down a fire once got up. There is no fire to be maintained whilst none is wanted against some future period when the fire will be wanted. The ingenious devices Mr. Fletcher puts forward in the shape of cooking-stoves are everything seemingly required for the application of gas, and they ought to tempt cooks to trials of them. The burners can be used singly or in multiple; they revolve so that by turning the flame downwards grilling may be performed by the radiation from them downwards, whilst boiling may be performed by the hot-air rising upwards from the flames beneath. Large square central chambers, clean whitewashed on the sides, and with gravy trays at bottom, afford admirable spaces for the cooking of joints or poultry. Double iron doors with silicate packing between the thin outer and inner sides stop all outward radiation of heat. The handiness, cleanliness, and convenience seem unexceptionable, but we doubt whether, whilst the companies carburet their hydrogen, gas-cooking will take extensive hold in general domestic service. The admirable way in which gas stoves can be used even now in large establishments by trained experts is indicative of what their application might become if the gas supplied were more suitable for the purpose.

The Parkes Museum authorities are doing well in submitting such an excellent series of special class goods to the public view, and which are so worthy of being selected as specially illustrating the sanitary conditions attainable even now by common gas in its present state.

THE OLD "CHESHIRE CHEESE" INN, WALLASEY.

THE village of Wallasey in Domesday is called "Walea" in a charter of 1081, and was afterwards changed to Walayesigh. After 1487 it is written Wallesey and Wallsea.

Ormrod's "History of Chester" states that "in the reign of Elizabeth Wallasey had a little port to which there belonged three 'barks' and fourteen men, a very inconsiderable quantity, but nevertheless nearly one-fourth of the number of 'barks' and mariners which then were employed at the infant port of Liverpool on the opposite shore, as in the same year, 1565, a census extant in the town records states the entire number to consist of only twelve 'barks,' navigated by seventy-five sailors."

The old Cheshire Cheese Inn is a quaint, squat, long, one-story building, thatched, divided into two rooms with a cock-loft over the kitchen. It is stated that King Charles II. slept in this old bed-chamber. The gable of the kitchen is built with freestone in regular coursed work, having an angle fireplace and a two-light mullion window, now built up, with a modern window at one side. The entertaining-room has a large hooded chimney corner, used in the days of log fires, with two old-fashioned squab seats. The roof is framed with arched jaw principals in oak; the feet rest upon the floor for support, and the rafters are tied across here and there. The beer-cellar is opposite the entrance, which is direct into the room; here is a very pretty "Queen Anne" door and casings in panels and lattice work, and a cupboard of the same date is fixed in the chimney corner.

The road into the village at this point being narrow, the commissioners have purchased the land upon which the inn now stands from the proprietor of the Vale Brewery for the purpose of making the road wider, which will be a great improvement, and in a few weeks this ancient hostelry will be cleared away. The licence dates back 220 years. Mortimer's "History of the Hundred of Wirral" says:—"In 1690 the troops of William III. were encamped in the village and neighbourhood previously to their embarkation for Ireland in the year 1696, accompanied by his Majesty in person, and a brilliant staff, including the Duke of Monmouth, the Marquis of Ormonde, the Earls of Manchester, Oxford, Portland, and Scarborough, and many others. The host of the Cheshire Cheese takes pleasure in showing the kitchen, which is traditionally reported to have been selected for the royal dormitory. The Wallasey Leasowe was probably the oldest gentlemen's racecourse in the kingdom, being noticed by Webb as existing in the early part of the seventeenth century. In 1683 the Duke of Monmouth rode as jockey a race which he won, and presented the plate to the daughter of the Mayor of Chester. Races discontinued 1750."

"Wallasey was once an island, its original name being 'Kirkby in Walley,' which means the church in the woody island, the parish being separated from the rest of the hundred by a small brook called the Birkin. Tree stumps and peat are still to be seen, the remains of a dense forest towards the sea." (Hume's "Ancient Meols.")

A new hostelry is now being built in the garden belonging to the old inn, in the Queen Anne style. The old wood, and other fittings will be refixed here, and the old oak timbers made into furniture, so that any architectural features the old house may be considered to possess will be preserved. The new building has been designed by Mr. T. C. Ebdy, architect, of Birkenhead, the contractors being Messrs. W. & J. Varty, of New Brighton.

SOCIETY OF ARTS PRIZE ESSAYS.

SOME time since, the Council of the Society of Arts undertook to award in prizes for essays on "London Reconstruction" and the "Housing of the London Poor" a sum of 1,200*l.* placed at their disposal by Mr. W. Westgarth.

The committee appointed to consider the essays sent in have reported to the effect that in their opinion none of the essays realise the requirements of the offer in such a manner as to justify them in recommending that the full amount of the prizes offered should be awarded. They recommended, however, that prizes amounting in all to 600*l.* should be awarded as under:—

Three prizes of 100*l.* each, to H. H. Bridgman, 42, Poultry, E.C.; J. Corbett, 24, Barton-arcade, Manchester; W. Woodward, 7, Duke-street, Adelphi, W.C.

Three prizes of 50*l.* each, to A. Wynter Blyth, Court-house, St. Marylebone, W., and R. Greene, Berry Wood, Northampton; Clement Dunscombe, City Engineer, Liverpool; C. Scott, Town Hall, Belfast, and J. W. E. Tilley, Royal-avenue, Belfast.

Six prizes of 25*l.* each, to A. H. De Wind, Comber, County Down; J. S. Fairfax, 3, St. Paul's-road, Camden-square, N.W.; Victor Jetley, 8, North Audley-street, W.; T. E. Julian, 22, Palace-road, Roupell Park, S.W.; W. A. Newell, M.D., 201, Palisade-avenue, Jersey City, N.J., United States of America; G. W. Usill, Haldon Lodge, Southfields, Wandsworth, S.W.

The Council, after consultation with Mr. Westgarth, have accepted the report of the Committee, and awarded the prizes as recommended. It has been determined that the three essays to which prizes of 100*l.* were awarded shall be published on behalf of the Society.

PROPOSED NEW EXCHANGE, AMSTERDAM.

THE final award in this competition took place last week, the following members of the jury being present:—

Herr D. Cordes, President of Chamber of Commerce, Amsterdam; Herr P. J. H. Cuypers, Architect, Amsterdam; Herr L. H. Eberson, Architect to the King of Holland; Herr S. Hepner, President of the Corn Exchange, Amsterdam; Herr J. R. de Kruijff, Director of the Art Schools, Amsterdam; Kgl. Baurath J. C. Raschdorff, architect, of Berlin; Oberbaurath Fr. Von Schmidt, architect, of Vienna; M. Paul Sédille, architect, Secretary of the Society of Architects, Paris; Mr. R. Phené Spiers, F.S.A., architect, London; Herr A. L. Wurfbain, President of Stockbrokers' Society, Amsterdam; and Herr. J. J. Van Ijsendijck, architect, Brussels.

The first prize of 10,000 gulden was awarded to the design bearing the motto Y, No. 175, its author being Monsieur Cordonnier, of Lille.

The second prize of 6,000 gulden to the author of "In hoc signo floresco," No. 150. M. Groll, of London and Vienna.

The third prize of 5,000 gulden to "La bourse ou la vie," No. 20, M. Volkmaar, of Berlin.

The fourth prize of 4,000 gulden to "Mercaturæ," No. 73, Messrs. Sanders & Berlage, of Amsterdam.

The fifth prize of 3,000 gulden to "Ammerack," No. 91, the name of the author not having transpired.

Illustrations.

ANCIENT BRASSES.

FOR information as to the two fine examples of ancient brasses, of which illustrations are given in this number, see the article on "Foreign Brasses" in another column.

"WESTGATES," SURREY.

THE house of which a view is given here is built from the designs of Mr. Halsey Ricardo, on some high ground on the road from Charlwood to Newdigate. The house faces westward, to command the view of Leith Hill and Holmwood. It is built of Bolney stone with Boxground stone dressings, with a red tile roof. The drawing from which the illustration is taken is in the Royal Academy Exhibition.

THE COBOLZETTER THOR, ROTHENBURG.

THESE sketches, by Mr. A. B. Pite, taken from the interior and exterior of the gateway, give views of a very picturesque though simple bit of old German building.

SCULPTURE AT THE PARIS *SALON*.

WE give this week illustrations of two of the works which were mentioned with commendation in the recent articles in our columns, by "R. B. Fenwick," on painting and sculpture at the *Salon* Exhibition. The first, "Protection," is by M. Demaille, and was described in the article referred to (p. 757, *ante*). The second, "Baptême Gaulois," by M. Ogé, is an example of the tendency of French artists at present to go back to early Gallic history and life for their subjects. This is an illustration of the warlike infancy of France, when it is supposed that the father's sword should be the most sacred object in the eyes of his children. The idea is perhaps too modern in feeling for the supposed period, but the work itself is a fine and robust one. "Protection," however, is the more intellectual work of the two, representing the highest use of sculpture for the representation of a purely abstract ideal.

MODEL PLANS FOR INFECTIOUS HOSPITALS.

THE Local Government Board have recently issued model plans for buildings for the isolation and treatment of persons suffering from infectious diseases. These plans, which are intended to serve as a guide to sanitary authorities in making the provision so necessary for the defence of their districts from invasion of epidemic diseases, have been prepared under the advice of the Board's medical officer and architect, and appear to have been very carefully designed, with the view to afford the greatest facility for the safe treatment of different diseases while involving the smallest outlay for building.

The group of plans at the top of p. 847 is for a complete hospital of the smallest kind, viz., for four patients, and shows a ward-block divided into two distinct portions each of which contains a ward-room for two beds, with a nurse's room adjoining. The rooms in one half of the building are arranged to open into an unenclosed verandah in front, while those in the other half open into a similar verandah at the rear, thereby tending to the more complete separation of the patients in one half from those in the other half of the building, while a railing across the verandah in each instance serves to hinder communication between the occupants of the two sets of rooms. The beds are arranged so that each patient will have the full benefit of the prescribed amount of space, namely, 2,000 cubic feet, 12 ft. lineal of wall-space, and some 150 square feet of floor space; the angles of the wards, both vertical and horizontal, are rounded in order to facilitate cleansing, and to prevent the deposit of infected dust; none of the four rooms in the building have any direct aërial communication with any other room, but a fixed window is provided in the wall separating the nurse's room from the adjacent ward-room. It is contemplated that, in so small a hospital, movable baths and dry-earth commodes would be used, with screens, in the ward-rooms: hence

THE BUILDER, JUNE 13, 1885.

C. F. Kell Photo-Lith. & Printer.

8. Castle St. Holborn. London. E.C.

0 1 2 Ft.

FOREIGN BRASSES.

BRASS OF MARTIN DE VISCH, BRUGES CATHEDRAL (A.D. 1452).

C.F.Kell, Photo-Lith & Printer, 8, Castle St Holborn, London, E.C.

0 1 2Ft

FOREIGN BRASSES.

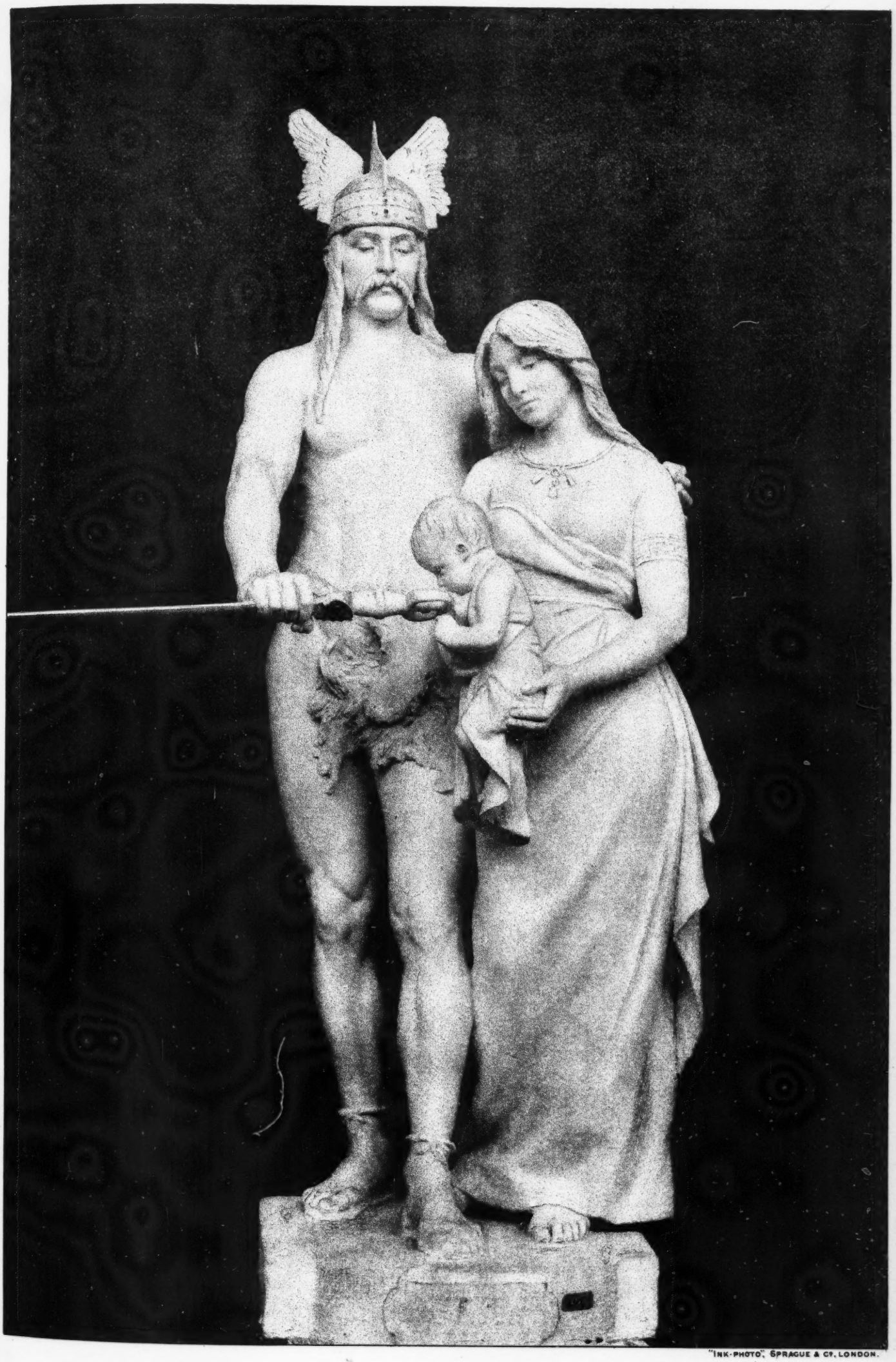
BRASS OF SIDONIA, DAUGHTER OF KING PODIEBRAD OF BOHEMIA: AT MEISSEN (A.D. 1510).

"INK-PHOTO," SPRAGUE & Co., LONDON.

SCULPTURE AT THE PARIS *Salon*.

"PROTECTION,"

M. DEMAILLE, SCULPTOR.



"INK-PHOTO", SPRAGUE & Cº, LONDON.

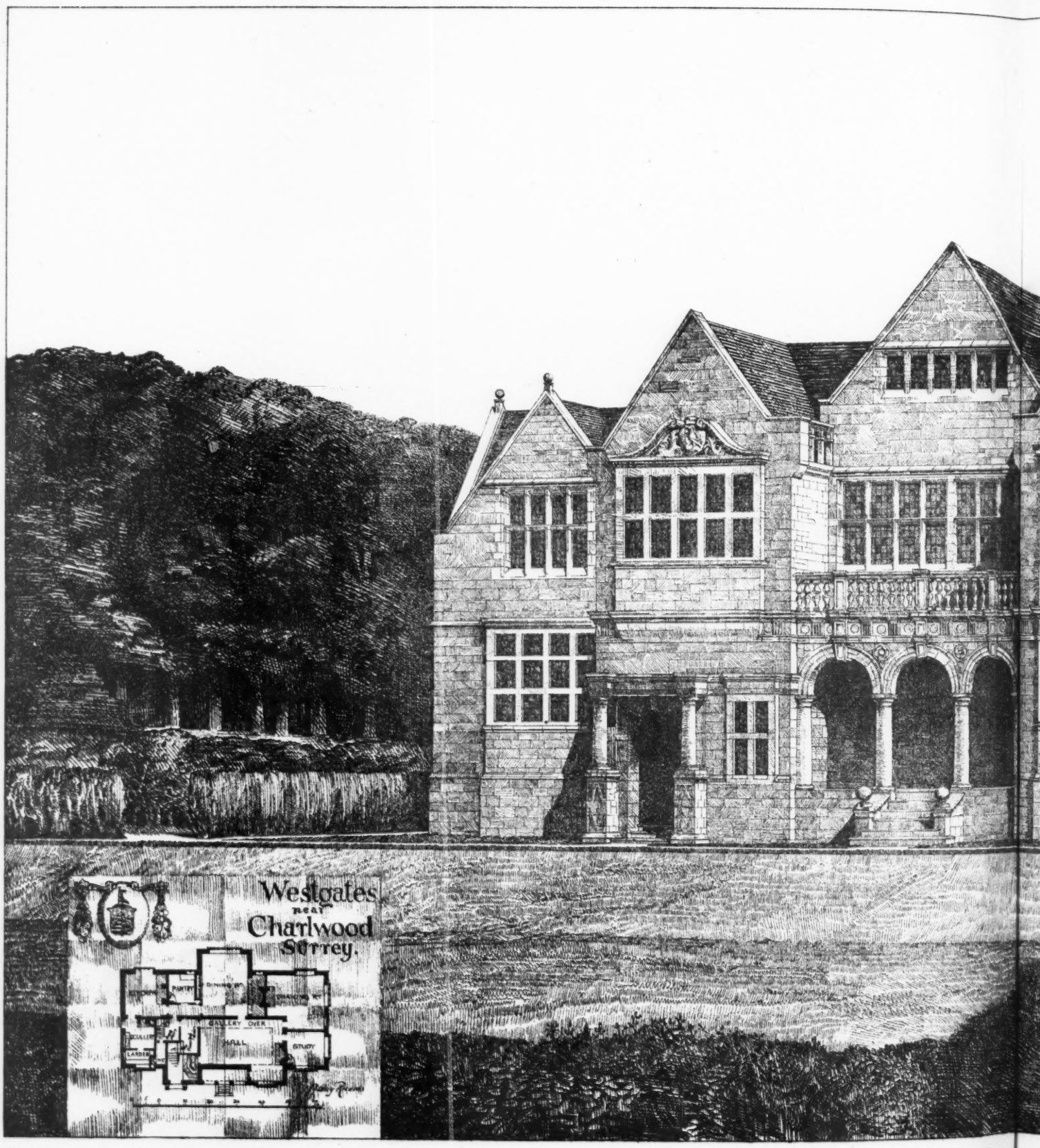
SCULPTURE AT THE PARIS *Salon*.

"BAPTÊME GAULOIS."

M. OGÉ, SCULPTOR.

C.F.Kell Photo-Lith & Printer,8 Castle St Holborn London,E.C.

THE COBOLZETTER THOR, ROTHENBURG. SKETCHED BY MR. A. B. PITE.

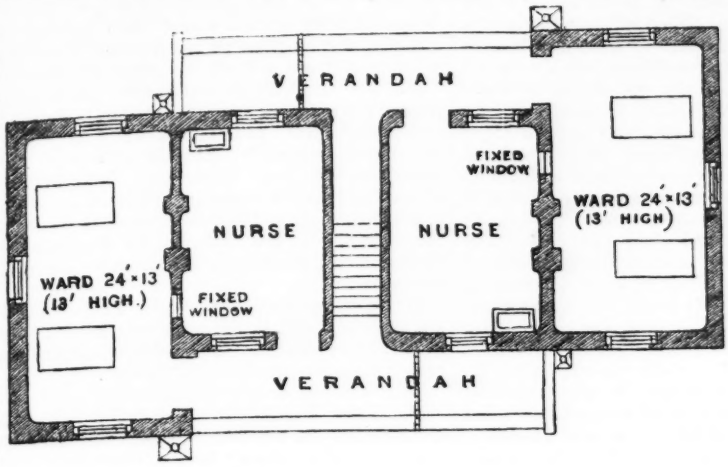


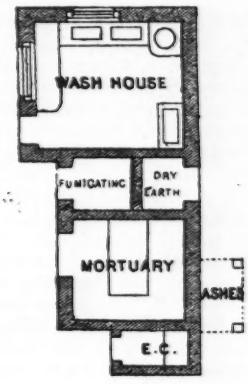
C F Kell Photo-Lith & Printer

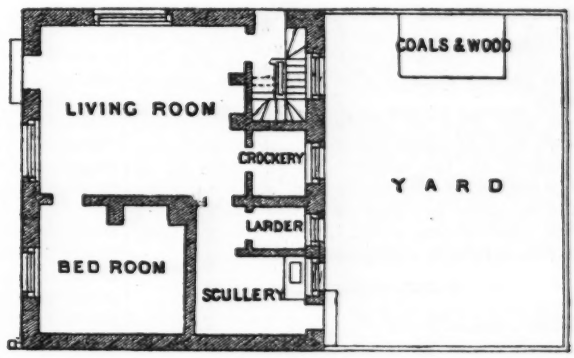
WESTGATES, SURREY. MR.

8.Castle St Holborn London E C

Y. MR. HALSEY RICARDO, ARCHITECT.







PLAN.

Scale of Feet

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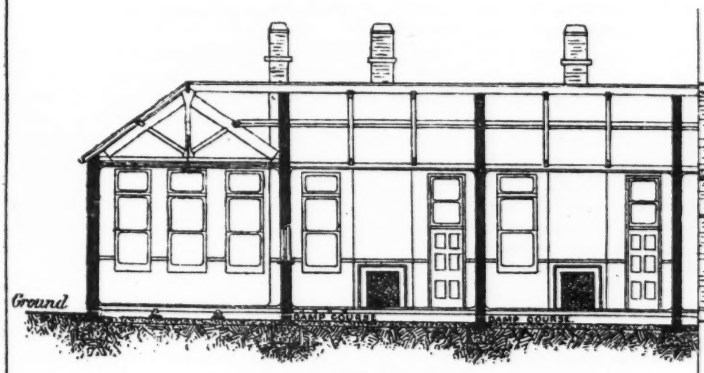
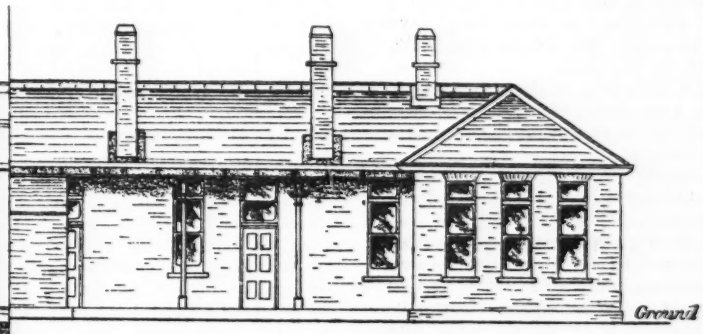
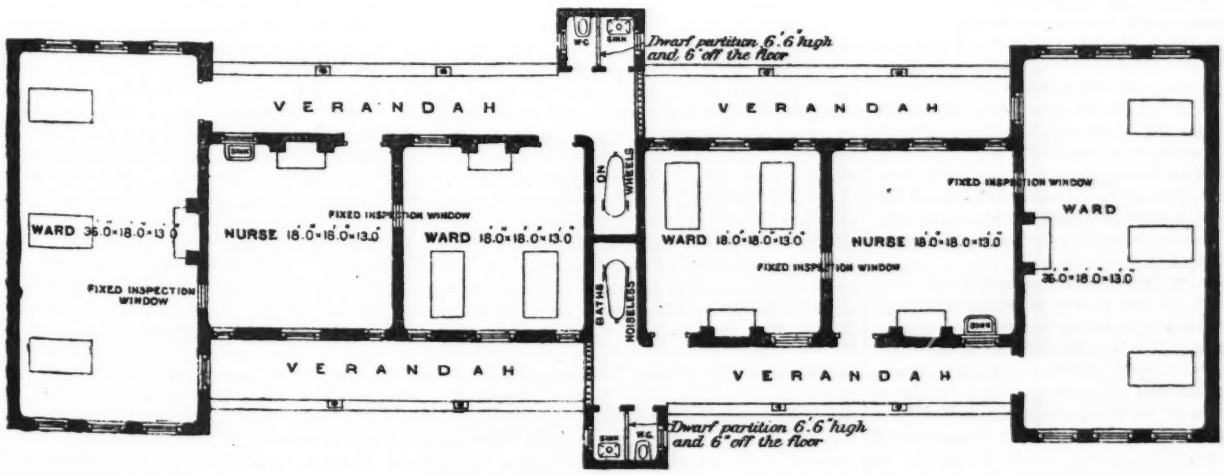


½ SECTION.



½ ELEVATION.



PLAN.

Scale of Feet.

10 5 0 10 20 30 40 50

MODEL PLANS FOR INFECTIOUS HOSPITALS.

bath-rooms and water-closets have been dispensed with.

This plan shows also a small block of offices (washhouse, mortuary, &c.), which, like the ward-block has to be kept at a distance of at least 40 ft. from the boundary-fence of the site. An administrative block, or caretaker's cottage, is provided at the entrance, but if, from motives of economy or otherwise, this should not be built, accommodation is provided for the staff in an upper story of the ward-block approached by a flight of stairs from one of the verandahs.

The larger plan on p. 847 is designed on principles similar to those of the small ward block in the first plan, but the building is on a larger scale. Indeed, it may form the ward accommodation for a district of some magnitude, seeing that it contains ten beds in four distinct wards, or it may form one block of a hospital, where the rest of the accommodation is provided in larger wards. In either case such a ward block would be found most useful, as it affords facilities for the safe isolation of cases of different infectious fevers, for the isolation of any individual case sent to the hospital in so early a stage that the precise character of the disease may not have definitely shown itself, and which therefore it may be desired to keep separate for a while, or for any patient desiring, and willing to pay for, more privacy than is afforded in the general wards.

In this plan no administrative offices are shown as it has been assumed that the staff, &c., necessary to the supervision and care of so large a number of patients as might occupy the building either by itself or in conjunction with other ward-blocks, would involve the provision of more extensive indispensable buildings.

ASSOCIATION OF PUBLIC SANITARY INSPECTORS.

ANNUAL DINNER.

THE second annual dinner of the members of this useful and growing Association took place on Saturday evening last, at the Holborn Restaurant, Mr. Edwin Chadwick, C.B., President, in the chair.

Dr. Cameron, M.P., in proposing "Success to the Association of Public Sanitary Inspectors," said he regarded sanitary inspectors as the regimental officers of the army of preventive medicine. Without the intelligent co-operation of sanitary inspectors no good result could be achieved. In the discharge of their duties they required great firmness and courage, and to be prepared to fight against both prejudice and ignorance, and still more against sordid interests. Under these circumstances it was important they should weld themselves into an association to maintain their views and to indicate to politicians unnumbered reforms of detail, which, without them, would be ignored. He supposed they would like to see the portals of their profession guarded in such a way that a man who entered it should be a credit to their body. He would couple the toast with the name of their president, to whom he paid a high tribute. Throughout the sanitary literature of the last half-century no name occupied a more honoured place than that of their president, who had been associated with everything done during the last half-century to improve the health of the nation and to lower the national death-rate. In conclusion, the hon. member expressed his hope that the Prime Minister in the next distribution of honours would do some justice to such men as their president.

The Chairman, in responding, observed that the perception of the power of sanitation, and demands for its application, are extending afar as well as near. But the great hopes of sanitary legislation are stopped by the delays of administrative organisation. To the devising heads of sanitation, the preventive engineer, or the preventive health officer, the sanitary inspector is the direct executive hand. After referring to the need of sanitary measures in Australia, Mr. Chadwick referred to the recent Sanitary Congress at Rome, and to the insanitary condition of many of the Italian cities. He continued: — The well-intentioned French politicians of the last century promised to the most depressed of the population the attainment of the greatest good when they had attained for them "liberty, equality, and fraternity." I forbear investigation as to what political or mental or metaphysical benefits may have been gained by them under those terms. But as the object of my study and experiences, I cannot fail to note and lament the dire physical conditions under which a large proportion of the population of Paris and of France suffer. With a finer climate and site the death-rate of Paris is 27 against 20 in London, and throughout France the depression is even greater than that we complain of in England. Of the working classes in Paris, the excess of their special death-rate partakes of that of the general death-rates, and their physical condition, instead of being one of liberty is one of slavery, of slavery to disease, of the scourging of painful diseases, of fever, of rheumatism, and of phthisis, by which their working ability and their wages are reduced, and their lives shortened by from one-third to one-half. By examples achieved they may be shown that by effective sanitation true liberty may be achieved for them, the liberty of health and strength, freedom from the excess of preventable diseases, and an augmentation of at least ten years more of life. As to equality, its deplorable violation is shown in this; that, whilst death now treads once at the château, it treads at least three times at the cottage, and the mother there has to bewail the loss of half the children born to her before they attain the age of maturity. Sanitation, and sanitation alone, will effect a real equality in this respect. As to fraternity, what practical evidences of it are visible other than in admission to hospitals, where the working disability from sickness is augmented by one-half, and the chances of recovery greatly reduced? For fraternity I may claim having, with my colleagues of the Commission of Inquiry into the condition of young persons engaged in our factories, initiated a measure of centralisation for the people, in place of the centralisation really against the people (chiefly for the levy of military force and war taxes), our centralisation "for the people" presenting the elements of real fraternity of protection by inspection of the places of work, protection against accidents by machinery, and protection for children by the half-time principle against exclusion from education. This last protection is now proposed to be extended to the sanitary inspectors of schools to detect and deal with the premonitory symptoms of disease, a protection by sanitary inspection which it is now proposed to have extended to a large proportion of the houses of the wage classes from experience of the sanitary benefits conferred by such inspection on the inmates of the common lodging-houses. It was objected that the restriction of the excess of the hours of labour, chiefly by my former colleague, the Earl of Shaftesbury, must reduce productive power and reduce profits and wages. But greater force has been given to production in the reduced time, and wages and profits have been augumented. Such is the centralisation for the people comprising the elements of a real fraternity, of which the most heavily death-rated of the wage classes of Paris and of France are greatly in need. I must not now transgress further than to submit that our object should be to impress the new constituencies with their paramount interest in this subject; with the wastefulness of ignorance, of which the metropolis has presented so great an example; with economy of true science, and with the need of legislative securities, for its application in administration. To this end it will be requisite to bring together the sanitary functions, now scattered and weakened and wasted in different departments under distracted and divided attentions, and to consolidate them under the undivided attention of a Board of Specialists, presided over by a Cabinet Minister of Health. By such an arrangement, the training for the specialities of the preventive service may be ensured for the colonies as well as for home. The need of the consolidation of the educational functions, now scattered and weakened and wasted in independent departments, is at length recognised, and it is proposed to bring them under the undivided attention of a Minister of Education, but the scheme at present displays imperfect conceptions of administrative organisation, in the omission of fundamental provisions for physical training, such as have been the greatest successes of our times, and also in the need of preventive sanitary inspection. I regret that we cannot have the presence to-night of our distinguished honorary member, Lord Shaftesbury, who served for five years as the most efficient member of our first general Board of Health. If he had been here, I would have recalled to him the text he gave to us from St. Paul, at a parting dinner, a text of prophetic import: "We are troubled on every side, yet not distressed; we are perplexed, but not in despair; persecuted, but not forsaken; cast down, but not destroyed." This is still true, but sanitation is yet living, is recognised, is advancing; and in desiring, as I do, with all my heart, "Success to the Association of Sanitary Inspectors," I am desiring for sanitation a further advancement for the foremost benefit of humanity.

Mr. William Rains proposed "The Houses of Parliament," and in doing so expressed a hope that the next Parliament would consolidate the laws relating to sanitary inspection.

Dr. Cameron briefly responded.

Dr. Lory Marsh proposed "Unity of Administration in the Metropolis." To the division of local authority in the metropolis they were indebted, he said, for many of the abuses and bad sanitation that existed in it.

Mr. James Beal, in responding to the toast, referred to an agitation got up many years ago against the gas companies, which resulted in a saving to the consumers of a million a year; and said the saving would have been much greater if there had been a municipality, and the same observation applied to the water companies, whose undertakings a municipality would have purchased for the sum they had cost.

Dr. Alfred Carpenter, in proposing "The Executive," said there was a general feeling that some means should be adopted to test the fitness of applicants for the office of sanitary inspector, and the subject was now under consideration. It was hoped before long to establish an Institute of Hygiene which should unite for common action all the societies concerned in sanitary work.

Mr. Jerram, the chairman of the executive, and Mr. Samuel C. Legg, the honorary secretary, spoke in acknowledgement of the toast.

Dr. B. W. Richardson proposed "Local Government."

Dr. T. Orme Dudfield, in acknowledging the toast, said he believed the complaints that the vestries neglected to carry out sanitary legislation were unfounded. In Kensington, where he was an officer of health, he was not interfered with in the least; and he believed that if it were known how much sanitary work had been done in London during the last few years the agitation against the vestries would cease.

ARCHÆOLOGICAL SOCIETIES.

British Archæological Association.—The closing meeting of the session was held on Wednesday, June 3rd, the Rev. S. M. Mayhew in the chair. It was announced that the intended works of repair about to be undertaken at Waltham Cross had been considered and approved by the Council. It is contemplated to improve the position of the cross by removing and setting back the buildings which at present join it. The Rev. Prebendary Scarth rendered a report by Mr. Herbert Reid of some excavations near Newbury, where two circles of flints have been found, 3 ft. below the surface, with the remains of wood fires. They were evidently beacons used in Roman times. Mr. Greenshields sent a beautiful silver fibula, and the Rev. Canon Routledge reported the discovery of a hagioscope in the west wall of St. Martin's, Canterbury, partly built over by the thirteenth-century tower. The west wall proves to be ancient Roman work, similar to what has been traced on the south. The Rev. Dr. Hoeppell described some remarkable interments of early date found within the ancient earthwork called Dane's Camp, Northampton, now being removed for iron ore. Mr. Loftus Brock, F.S.A., exhibited a Roman vase found at Colchester. The first paper was by Mr. T. G. Pinches, of the British Museum, on Babylonian Cylinders. He reviewed the whole history of these remarkable objects, illustrating his remarks by the exhibition of many specimens of great beauty and interest, several being of great antiquity, some being 2,700 years B.C., of very good workmanship. Dr. Hayes Ward, in the discussion which ensued, suggested that correct information should be obtained as to the actual localities where such cylinders were found. The second paper was by Mr. Romilly Allen, F.S.A. Scot., on some recent discoveries of Saxon sculptures

of interlaced patterns on stone, found at Rockland and Colsterworth, in Lincolnshire, and Bexhill, Sussex. At the latter church, a fine small Saxon tomb has been found, covered with patterns of very great beauty. A third paper was then partly read, on the Saxon tower of Barnack Church, by Mr. J. T. Irvine. A good deal of sculptured work here was illustrated, particularly a window filled in with a slab of stone pierced with an open-work pattern.

London and Middlesex Archæological Society. A general meeting of the members and friends of this Society took place at the Tallow Chandlers' Hall, Dowgate-hill, on Tuesday last, the 9th inst., by permission of the wardens and court of assistants. Mr. Edwin Knight, the master, occupied the chair, and briefly welcomed the visitors, and introduced Mr. M. F. Monier-Williams, clerk and solicitor to the company, who read an interesting descriptive history of the charters, hall, and other matters of interest connected with the company. The earliest reference to it was in 1426, when letters patent were granted by Henry VI. empowering the Tallow Chandlers of the City to search for and destroy all bad and adulterated oils. Their first charter of incorporation was obtained in 1462 from Edward IV. The original grant of armorial bearings is in excellent preservation. The minutes of the company did not state who was the architect of the hall. Some thought it was Sir Christopher Wren, but this was doubtful. The two oil portraits of William III. and Queen Mary were by Sir Godfrey Kneller. There are some handsome Chippendale chairs. The table was saved from the Great Fire, from which the Company suffered severely; but, owing to the energy of the then Master, the archives were removed from the Hall before the fire reached it, and it is recorded that he took them in his coach to Hampstead. Mr. Monier-Williams concluded by referring to the recent Underground Railway works, and regretted that the panelling of the hall and other rooms had been much damaged of late by the railway, which ran almost immediately beneath the building. Mr. Alfred White, F.S.A., proposed a vote of thanks to Mr. Monier-Williams. After inspecting the different rooms, plate, charters, and other chief objects of interest, the members and visitors adjourned to the *Church of St. Lawrence, Jewry*. Mr. Louis Stokes said this was one of Sir Christopher Wren's churches, and was generally thought to be one of his best, as regards the richness of decoration, stability of structure, and the wonderful manner in which the architect adapted himself to the peculiar wants of the place. There was very little known about the church before the Fire beyond what Stow said, that it was a large and fair building; he (Mr. Stokes) made special mention of the very great repairs which were executed in 1618, and said that in the old building there were two private chapels. Directly after the Great Fire a committee was appointed, and the church was commenced in 1671. One curious matter was that the Moorfields morass extended as far back as the church, and the architect was obliged to drive piles 12 ft. long to the depth of 7 ft. to get a foundation for the church on the north side It was one of the most expensive of the City churches built, at that time costing over 15,000*l*. It took nine years to build, and the congregation meanwhile used the Chapel of St. Mary Magdalene, or the Lord Mayor's Chapel, which was on the eastern side of Guildhall-yard. When this was demolished many monuments were removed to St. Lawrence, Jewry. In the books Mr. Pearse was mentioned as the carver of the organ and other woodwork in the church. The building was wonderfully well adapted for hearing, one of the great points which Sir Christopher Wren always had in view. The windows were all modern, as also was the mosaic over the altar. There is a monument to Gresham, father of the celebrated Sir Thomas Gresham. Among the rectors were Tillotson, afterwards archbishop. After inspecting the ancient plate, &c., the visitors proceeded to the Guildhall, where they first inspected the Library and Museum, and then the new Council-chamber. Mr. Gannon, keeper of Guildhall, conducted them through these buildings and the old Council-chamber. Mr. E. C. Robins expressed his pleasure at inspecting the new Council-chamber, and said he was at the Royal Institute of British Architects on the previous evening, when a portrait which had been painted by Mr. Holl was presented to Mr. Horace Jones. He thought the building was a great honour to the architect as well as to the Corporation. The visitors having descended to the crypt, Mr. Alfred White, F.S.A., said that the crypt or undercroft of most buildings was one of the most interesting parts, for many reasons. It told the history of the building above it better than any other part, and this was particularly the case with this one. This was a very small portion of the Guildhall, and extended under a small part of the east end of the hall; whether the rest of the Guildhall had an arched crypt of this kind there were no means of determining. On the south side of the Guildhall stood, as he could just remember, the chapel of the Guildhall. That was a building of very ancient foundation,—certainly as early as before 1300. The present hall did not commence till the year 1411, therefore there was a chapel there long before the Guildhall was built. But there were indications of a more ancient hall. There was a great peculiarity in the crypt. The crypts of domestic buildings had always a line of columns in the centre, as at the great hall of South Wingfield, in Derbyshire, which was of gigantic size. But he found the crypts of all ecclesiastical buildings there were two rows of columns down the centre, dividing them into three bays, and this was the case with the crypt of the Guildhall. This was the original crypt of the chapel of the Guildhall. In pulling down the old chapel of the Guildhall some interesting monuments were found, among them a slab which was now in the Guildhall Museum, to the memory of Geoffrey le Trompeur. Everything went to show that this was the site of the ancient chapel of St. Mary Magdalene, and that this was the crypt of the chapel itself. After inspecting the crypt, the members and friends adjourned to the Holborn Restaurant to dine, under the presidency of Major Alfred Heales, F.S.A. Mr. H. S. Milman, F.S.A., responded to the toast of the "Society of Antiquaries"; Mr. R. S. Ferguson, F.S.A. (ex-Mayor of Carlisle), for the Cumberland and Westmoreland Archæological Society; and Mr. Thomas Milbourn for the Surrey Archæological Society.

"A DAY IN THE COUNTRY."

WE have received the following circular from the Committee of the East London Mission, to which we gladly give publicity:—

"The Managers of the East London Mission, 263, Cable-street, Shadwell, E., earnestly solicit help to enable them to take 600 of the very poorest children from the courts and alleys of East London for a day in Epping Forest. This annual treat, already eagerly anticipated by the little ones, includes dinner, tea, amusements, &c.

Contributions from benevolent and Christian friends are earnestly solicited, and should be sent to Mr. G. Hopkins, Superintendent, Mission Hall, 263, Cable-street, Shadwell, E., by whom they will be gratefully acknowledged."

BUILDING OVER THE DEAD.

GIBBONS AND OTHERS *v.* CHAMBERS.

THIS case, tried in the Queen's Bench Division on Wednesday last, before Mr. Justice Day, involved a legal issue of a very singular kind. The action was brought to recover two quarters' rent, amounting to 70*l.*, of a piece of land at Bethnal Green, known as the Peel Grove Burial Ground, the facts in connexion with which were last year before the public and the courts of law. The action was brought under an agreement dated the 9th of February, 1883, between the plaintiffs and defendant, by which the defendant agreed to erect certain buildings on the land in question before the 25th of March, 1884; the plaintiffs agreed to grant to the defendant when such buildings were erected a lease or leases of the said land and buildings; the defendant agreed to accept such lease or leases, and the defendant further agreed to pay rent to the plaintiffs at the rate of 140*l.* per year until such lease or leases should be granted. The present action was to recover such last-mentioned rent, the buildings not having been erected by the defendant under the agreement. The defence was that an Act of Parliament passed last session (47 & 48 Vict., c. 72) made it illegal to erect any building on a disused burial-ground, and that by virtue of this Act the agreement was illegal, and failed. On this ground the defendant denied his liability to pay any rent under the agreement, but at the same time paid into Court a sum representing an apportionment of the rent to the date in August last, when the Act received the Royal assent.

One or two surveyors were then called to prove that it was impossible to build over the ground without removing the bodies, in consequence of the certainty of subsidence of the soil, and that no local authority would assent to such building.

Mr. Justice Day gave judgment for the defendant. His lordship was of opinion that in this case the freeholder and the builder entered into a contract which necessarily involved a violation of the rights of those who had paid money on the faith that their friends and relations should lie in this ground undisturbed, and that this amounted to a conspiracy, which would in itself render the contract illegal.

Judgment was accordingly given for the defendant, but without costs, the learned Judge remarking that there were no merits in the case, and that it was an unholy proceeding altogether.

[We condense the foregoing from the *Times* report. Mr. Justice Day's decision will be gratifying to all those sanitarians who, with us, protested from the first against the proposal to build over this burial-ground. It is satisfactory to find that the day of retribution has come.]

THE REFORM OF THE INSTITUTE.

AT the meeting of the Institute on Monday a short paper was read by Professor Kerr, in which he recommended that the work of the Institute should be divided and directed by several committees. To this proposition the Council, I believe, agree. To one of such committees I would suggest should be deputed the office of communicating with each Architectural Association in the land that their co-operation may be obtained with a view to federation. At present these associations have no power. They are so many scattered atoms, and when the proposed new charter goes up for confirmation by the Queen in Council the question will be asked, Why should the Institute ask an extension of its powers? Is there not a large number of mutual admiration associations in the country, and beyond mere chit-chat coteries, of what value are they to the State and the public? If the Institute wishes to widen its base, should it not be required to give in return to the public through its members increased efficiency and protection in case of malversation, so that the fear of a black mark against the name of any wrong doer may keep men straight, as in the case of the Law Society? At present the public are not protected, and the remark of the late Prince Consort to Sir Gilbert Scott that any one could set up as an architect expressed both truth and satire.

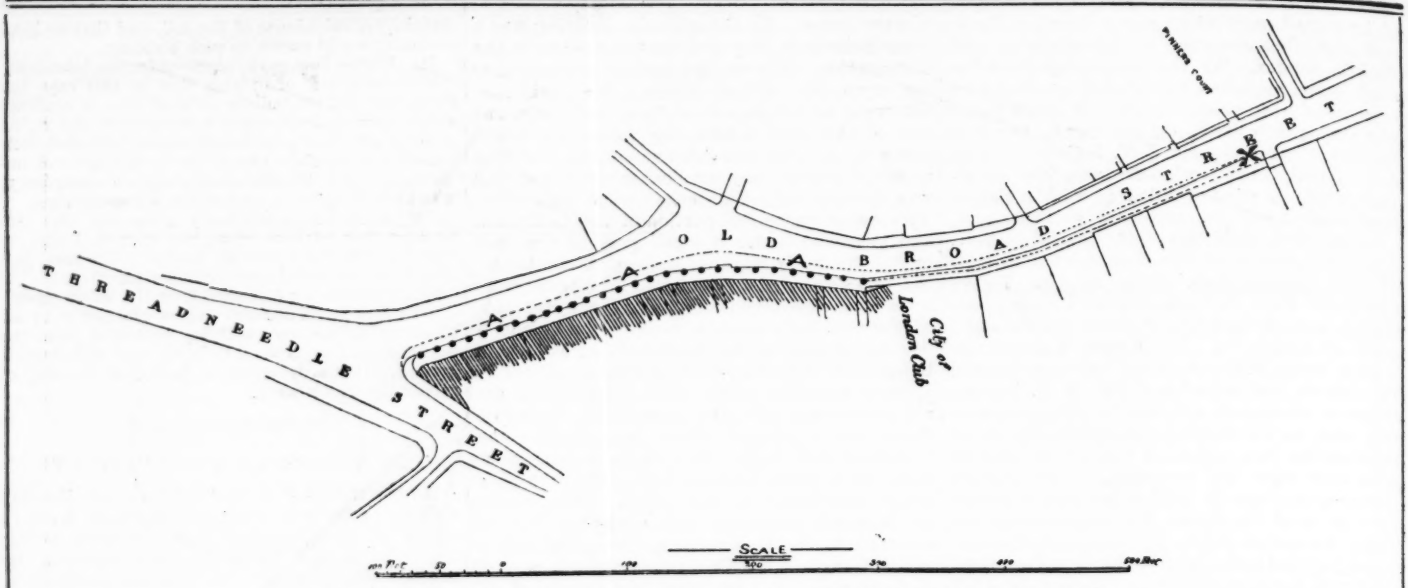
THOMAS E. KNIGHTLEY.

CURVES OF CONTRARY-FLEXURE.

SIR,—My paper, on the above subject [*Builder* May 30, p. 752], does not exclude any curve of contrary-flexure from consideration. It is designed to afford a clue to the *rationale* of the mental evolution or conception of a line of beauty, to those æsthetic conditions to which any curve of contrary-flexure, to be beautiful, must conform. In the wider mathematics all curves are mathematical curves. Many persons imagine that every geometrically or mechanically described curve must necessarily be beautiful. This is a very venerable and a very fallacious supposition. But that I stand alone in composing ogee curves of segments of circles, &c., as your correspondent insinuates in the *Builder* of the 6th inst. [p. 814], is utterly refuted by Mr. Penrose's interesting Royal Academy lecture, only a few pages off [pp. 334, 371, *ante*]; from that he might have learned that it was the practice of the Grecian and Roman architects to combine curves to form the cymatium as I have done, and that Mr. Penrose also denominates such curves, curves of contrary-flexure. The cymatium above the frieze of the Parthenon,—of the Parthenon!—was composed of *segments of circles*, a practice common in Roman architecture, but unusual in Grecian, in which segments of other curves were used. It would be interesting, however, to learn whether there be an instance of the use of that particular curve of contrary flexure, championed by Mr. Tarn, in either Classical or any other architecture.

W. CAVE THOMAS.

The Hotel Metropole.—We are asked by Mr. Edgar P. Jones, of the Melincourt Brickworks, Resolven, Briton Ferry, to state that he supplied a large quantity of enamelled glazed bricks for this building.—Messrs. Alfred Goslett & Co., of Soho-square, write to say that they executed the glazing.—Mr. John Smeaton, of Ludgate-circus, says he supplied his patent dust-shoots for this hotel, as well as for the First Avenue Hotel.



Messrs. Copland & Gilmour's Suggestion for the Widening of Old Broad Street.

A SUGGESTION AS TO THE WIDENING OF CITY STREETS.

SIR,—Our attention having been directed to the rapid increase of traffic along Old Broad-street to the neighbourhood of the Royal Exchange, which has been created principally by the erection of the new railway stations in Liverpool-street, and the consequent frequent blocks of vehicular traffic and crowded state of the footways,—particularly at the commencemeat and close of the ordinary business hours,—also to the fact that during wet weather no one can pass along the street without being much splashed by passing vehicles, we trust that as it is a matter of public interest, you will pardon us for intruding on your space by suggesting the cause of such inconvenience, together with a suitable and comparatively inexpensive means of remedying the same.

The obvious cause of the above state of things is the narrowness of the street, particularly at the south end, where at one part, by the Ocean Marine Insurance Company's offices, the footways are respectively 7 ft. and 5 ft. in width, and the roadway about 16 ft., thus only allowing of one vehicle to pass another, whereas a street with such an amount of traffic should provide for four, or at least three lines. It is well known that the City authorities are ever anxious to improve the facilities for street traffic, even when involving a large expenditure in the purchase and compensation for removal of valuable property. This item would form a considerable part of the expense of widening Old Broad-street, and if effected in the ordinary way would be likely to prove an almost insurmountable obstacle. We would therefore suggest that the existing buildings should be retained as a whole, the curb line at the east side being set back from its present position, as shown on the dotted line A, A, A (see above sketch plan), to the face line of the buildings commencing from the junction with Threadneedle-street to the City of London Club, a colonnade being substituted for the ground-floor frontages, a footpath of from 8 ft. to 10 ft. in width carried behind the same, and the offices and shops in the rear being lighted by continuous glazed fronts. Thus no serious diminution of light or rental value would be caused, except so far as related to the diminished area of the ground-floors. From this point northwards, the improvement would consist in throwing the spaces occupied by the areas into the footway, and lighting the basements by means of prismatic lights; the existing curb, as shown by the dotted line, being set back to the firm line in continuation of the proposed colonnade, and running into the present curb at the point marked X, opposite Pinner's-court.

By the above means, a minimum width of roadway would be secured, sufficient for three lines of traffic, besides obtaining more commodious footways.

We also notice that, notwithstanding the congested state of the traffic, a pillar letter-box is so placed opposite Gresham House as to leave only sufficient space for two people to pass abreast. We should have thought a wall-box behind the railings would have answered every requirement.

COPLAND & GILMOUR, Civil Engineers.
42, *Old Broad-street, E.C.*
May 28th, 1885.

P.S.—The above principle is not only applicable to Old Broad-street, but to several other crowded City thoroughfares.—C. & G.

The Conversazione of the Institution of Civil Engineers, on the 12th inst., was very largely attended, and the enjoyment by the visitors of the varied programme set before them was facilitated by the favourable weather.

"WESTGARTH ESSAYS."

SIR,—Every competitor, whether in receipt of a prize or not, should enter a strong protest against the action of the Council of the Society of Arts in their award of only half the sum offered by Mr. Westgarth.

The committee's report, "that, in their opinion, none of the essays realise the requirements of the offer," should bear some explanation. The offers as issued by the Society were for the best *practical* essays on the subjects, and although the Council reserved the right to withhold or deal with the prizes as seemed to them desirable, it is none the less a breach of trust to arrogate to themselves a standard of merit, and to deprive competitors of the full value of the liberal offer made by Mr. Westgarth.

NEMO.

DOMESTIC WATER-SUPPLY.

SIR,—Permit me to occupy a small space in your paper to draw attention to the necessity for the inspection and cleansing of cisterns at this period of the year. It is a matter of urgent necessity that all cisterns should be examined and thoroughly cleansed. The trouble and cost are of no moment as compared with the consequences which may ensue. Householders will be astonished in many instances, at the amount and character of cistern mud deposits, and if these are neglected at this season water drawn from these sources may be expected to be more or less offensive. It is quite true that in most instances the cistern is used only for supply of water-closet; but it is equally the fact that in many cases the domestic supply from hot-water pipes for scullery use and of cold water for cooking purposes are drawn from cistern supplies, whilst in some few cases, perhaps, the domestic supply altogether is from this source. At any rate, I strongly advise householders to look to the cistern as a possible source of mischief and of family sickness of a dangerous or fatal character.

JOSEPH BRIERLEY, C.E.

ITALIAN SILVER-GREY SLATES.

SIR,—We have been much interested by the perusal of the letter in your columns [p. 814, *ante*] descriptive of the above, and should like to know if the slates referred to are from the same "rock" which supplied this business with a cargo some years ago? If this should prove to be the case, we cannot agree with your correspondent in thinking that the Welsh slate need very much fear being superseded by this "silver grey" rival.

Attracted by the moderate price noted by "An English Traveller," our predecessor speculated in the cargo above mentioned; but this sample lot was more than sufficient. The breakage was terrible. Instead of "hardening and becoming like stone," and presenting a substance which "can hardly be broken," the slates crumbled at the touch of the slaters' tools, and split in half when nailed on the roof. Indeed, so far from becoming harder, and excelling in durability, the process of decay set in rapidly, until the surface of the slate could be scraped like chalk.

We may mention that in some cases, for his business reputation's sake, our predecessor supplied other slates at his own expense.

Your correspondent refers to the habit which the slates he describes have of changing colour upon exposure, as a *virtue*. If giving the roof the appearance of being whitewashed be a virtue (from an architectural point of view), then the slates were certainly commendable; but, somehow, our customers were unable to appreciate this characteristic. We join most heartily with your correspondent in wishing every success to the enterprise for developing the natural resources of Italy, but we cannot refrain from expressing a hope that the effort will result in something better and more useful than the sample of roofing-slates which that sunny land supplied to Alfred Braby, to whom have succeeded,

yours faithfully, E. & C. BRABY.

*** We have received other letters to the same effect.

STAINED GLASS.

Ventnor.—On Ascension Day a painted three-light window, representing Faith, Hope, and Charity, was unveiled in St. Luke's Chapel of the Royal National Hospital for Consumption, Ventnor, being the gift of Mr. Stafford Henry Northcote and family, in memory of the late Mrs. Northcote, who was a warm friend and benefactress of the hospital. The work was executed by Messrs. Heaton, Butler, & Bayne, of London.

Kington (*Herefordshire*). — A four-light Munich window has lately been presented to the parish church of Kington, Herefordshire, in memory of the late Dr. G. Foote. The work has been designed and carried out by Messrs. Mayer & Co.

Felsted.—Mr. H. W. Stock and other members of his family have offered to put a stained-glass window in the apse of the chancel of Felsted School chapel, in memory of their relative, Cecil H. Stock, architect, who was at the school from September, 1870, to June, 1877, and who died prematurely in 1883, as we mentioned at the time. Mr. C. H. Stock will be remembered as the author of a useful book on "Shoring."

Burrington.—A stained-glass window has just been completed at the north-west end of this recently-restored church. It is a three-light window, and represents the appearance of Our Lord to Mary Magdalene in the garden. The window, which is by Messrs. Heaton, Butler, & Bayne, of London, is in memory of the wife of Prebendary de Moleyns, vicar of the parish.

Gibbs & Flew (Limited). — An extraordinary general meeting of the shareholders of this company was held at the Cedars Estate Office, on Monday, the 8th inst., when several special resolutions, which were passed at the general meeting held on the 21st of May, were confirmed. The report of the directors, which was duly adopted, after recommending a dividend at the rate of 7 per cent. per annum, proceeded to point out that the constitution of a Limited Company was not suited to the effective and economical carrying on of an active building business, it being impossible to avoid very heavy charges, legal and otherwise, which would not be incurred by a private firm. After some little discussion, it was determined that the Limited Company should resolve itself into a House Property Company, under the name of "The West Kensington Estates Company," and that the whole of the plant, machinery, and building business, and portion of the estates be purchased from the company by Mr. Gibbs and Mr. Flew, for the sum of 70,000*l*. Messrs. Gibbs & Flew will carry on the business of builders privately, as before.

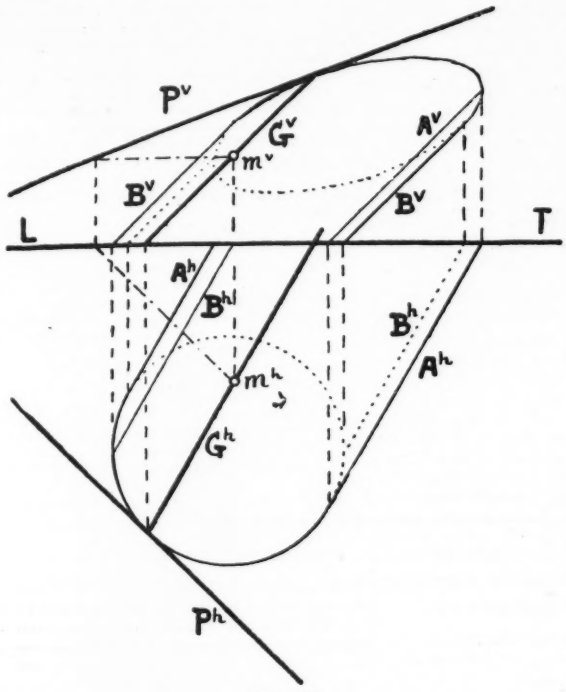


Fig. 99.

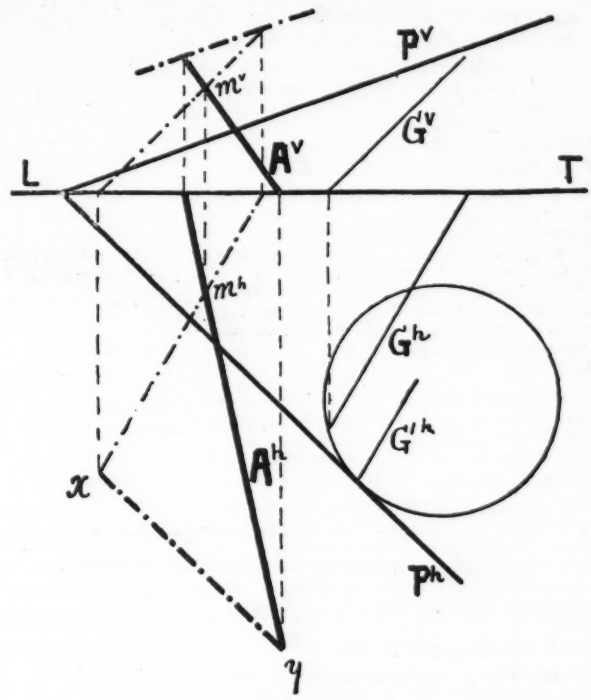


Fig. 101.

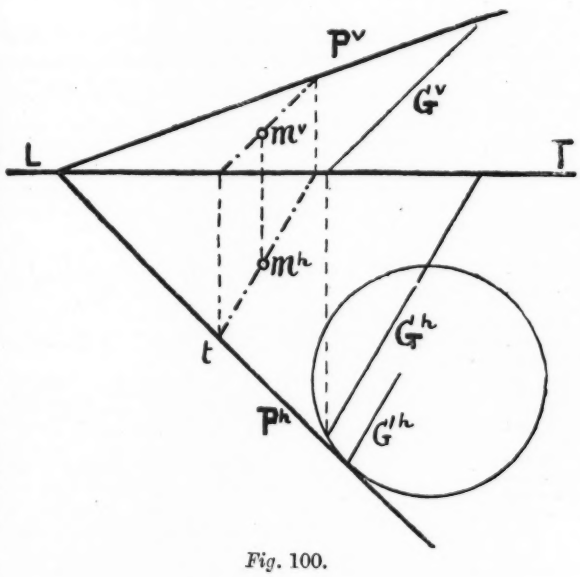


Fig. 100.

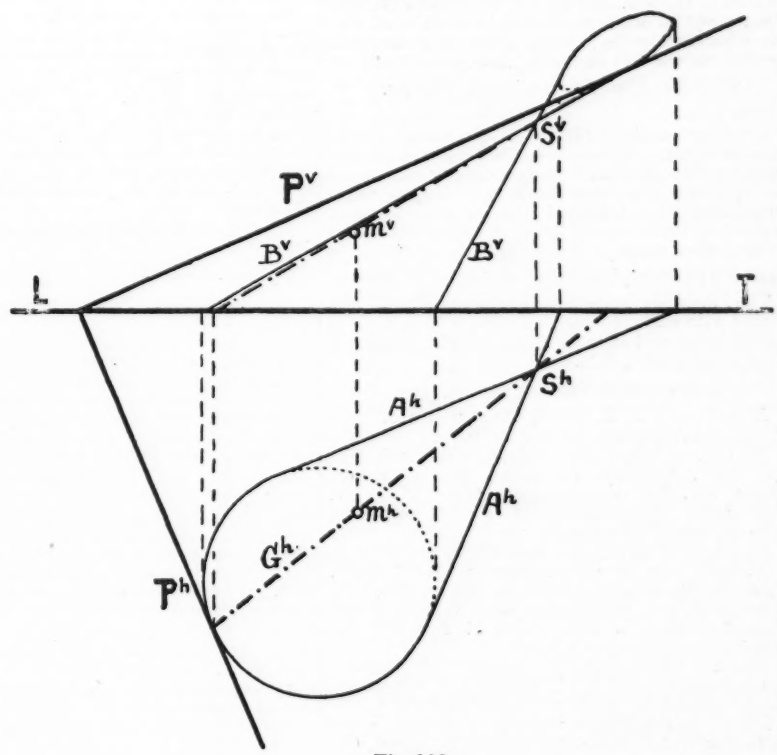


Fig. 102.

The Student's Column.

DESCRIPTIVE GEOMETRY.—PART II.

III.

CONES AND CYLINDERS.

Representation of a cylinder and of a plane tangent to it.

THE cylinder is given by its basis on the plan and the direction of its generators. Every generator will have its projections, G^h, G^v, parallel to the projections of the direction given, therefore they can be readily drawn and, by marking the points where the generators enter the elevation plane, we get the vertical trace of the cylinder.

The plane P tangent to the cylinder along any generator G will be tangent to the base of the cylinder in the point g foot of G, and thereby we get P^h. If P^h meets L T we get thereby a point of P^v and the vertical trace of G is another. If P^h meets L T outside our paper, as in fig. 99, we take a horizontal line of the plane P through a point m of the generator G, and its trace will be a point of P^v.

The outline of the cylinder, either in plan or elevation, are the extreme projections of the generators, such as A^h, A^h on the plan, B^v, B^v on the elevation. (See fig. 99.)

Find a plane, P, *tangent to a cylinder, and passing through a point,* m, *outside the cylinder.*

We take through the point m a line parallel to the generators of the cylinder, and find its foot, t, on the plan; P^h goes through t, and is tangent to the base of the cylinder. It will be seen that through t two lines, P^h, could be drawn tangent to the cylinder, and we conclude that through the point m there are two planes tangent to the cylinder. This problem is identical with *find the shade of a cylinder lighted by a candle;* the limits of the shade would be the generators, G^1, along which the planes, P, are tangent. (See fig. 100.)

Find a plane, P, *tangent to a cylinder and parallel to a line,* A, *given.*

Through a point, m, of the line A we produce $m\,x$, a parallel to the generators of the cylinder; we connect the foot, x and y, of the lines A and $m\,x$, the trace, P^h, of the plane will be parallel to the line $x\,y$. Here, again, there are two planes that satisfy equally the question. This problem is also identical with *find the shade of a cylinder lighted by the sun's rays;* the limits of the shade would be the generators, G^1, along which the planes, P, are tangent. (See fig. 101.)

Representation of a cone and planes tangent to it.

The cone is given by its basis on the plan, and by its apex, s, any line, G, which connects a point of the basis with the apex is a generator of the cone. The lines A^h are the extreme positions of the plans of the generators G, and, therefore, form the outline of the plan of the cone, and so do the lines B^v form the outline of the elevation of the cone. Given the plan of any point, m, of the cone, we find its elevation by drawing through that point a generator, on the elevation of which we will find the elevation of the point m. (See fig. 102.)

Find a plane, P, *tangent to the cone on a point,* m, *of its surface.*

We find the generator G, on which the point m is situated; P^h will be tangent to the base of the cone at the foot of G, and P^v will pass through the vertical trace of G. (See fig. 102.)

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

827, Locks and Bolts. W. C. Jones.

The main bolt, which is of peculiar shape, is centred so that it always has a tendency to shoot in virtue of its own weight. It is drawn back by a follower on the knob spindle, and may be locked when shot by a small auxiliary lock.

2,345, Sash Fastening. W. Macvitie.

The lever is pivoted on the meeting-bar of the upper sash, a coiled spring on the pivot tends to make it assume a position parallel to that bar. A hollow pillar fixed to a plate is secured on the meeting bar of the lower sash. A catch on a spring riveted to the plate of the fastener engages with a hollow arm when it is drawn across. By pressing the thumb-piece the catch is disengaged and the lever may then be pushed back.

2,777, Wall Ties. W. Monnery.

The ties are intended for binding together double walls, between which a space is required, and are made with shoulders to prevent the walls collapsing. The branches within the walls are serrated.

5,396. Flooring Cramp. T. Thornton.

The boards are clamped by a sliding-bar driven forward by a lever, which is an end piece falling below the bar. The tongue of the cramp is longer than the ordinary pattern, and when the boards are cramped up, a wedge is driven in allowing the tongue to return to its normal position and releasing the cramp.

6,014, Wall Ventilators. W. Cowell.

The ventilator is of a boxlike form, and is provided on the outside with flaps or louvres, with air-spaces between. The bottom louvre overlaps the bottom of the box, and each of the others overlaps the top of the one immediately beneath it, so that while permitting the passage of the air from within or without, the rain and moisture are excluded.

10,221, Window Frames and Sashes. R. Mason.

The upper sash is pivoted at its centre to the window-frame, the lower one is hinged or pivoted at its bottom edge to the lower bar of the frame of the window. The sashes may be opened by cords for ventilation, &c. A strip of wood or other material is fixed by springs to the joints of sashes and frames to keep them tight.

13,921, Drain-pipes. C. Broad and G. Harris.

The moulded articles are partially dried, and coated with white enamel. They are then fired in biscuit kilns, and afterwards coated with glaze, and fired in the glazing kiln.

APPLICATIONS FOR LETTERS PATENT.

May 29.—6,521, T. Street, Construction of Lock Bricks and Apparatus for making same.

May 30.—6,579, J. D. Denny, Double Lock Tiles for Walls, Ceilings, Partitions, &c., with Box, Plates, &c., for manufacturing same.—6,581, J. Billingham, Steam Excavators.—6,601, H. Lake, Improvements in Pipe and other Wrenches.

June 1.—6,608, E. Lancaster, Electrical Indicator.—6,629, H. Lake, Disinfecting Apparatus.—6,639, F. Lyte, Manufacture of Refractory Bricks, Furnaces, Converters, and other Refractory Apparatus and Cement.—6,643, R. Hunter and J. Turnbull, Improvements in Kitchen Ranges.

June 2.—6,653, T. Bradford, Improved Disinfecting Apparatus.—6,675, W. Todd and A. Spademan, Improvements in Window Sashes and Frames.—6,683, P. Davies, Improvements in Fire-plugs and Boxes for Water Mains, &c.—6,686, G. Smart, Improved Tool Stock or Brace.—6,688, H. Allison, Improvements in Calipers and Dividers.—6,701, A. Link, Mounting Circular Saws for Cutting Piles and analogous operations.—6,704, E. Beech and T. Wrigley, Construction of Shutters or Guards for Shop Windows, Doors, &c.—6,705, H. and W. Schooling, Joints for Metallic Windows and Other Frames.—6,712, J. Budd, Ornamental Glass for Decorating Walls and Ceilings.

June 3.—6,734, T. Howie, Appliance for the Guidance of Visitors in Buildings, Grounds, &c.—6,748, V. Schneider, Controlling Apparatus for Preventing Waste of Water.—6,753, J. Lorrain, Apparatus for Heating, Cooling, and Ventilating.—6,766, W. Parry, Improved Scaffold Fastener.—6,769, J. Gilmore and W. Clarke, Improved Pipe Union or Joint.

June 4.—6,783, R. Bateman, Ventilation of Public Offices, Rooms, &c.—6,813, C. Kingsford, Apparatus for the Manufacture or Treatment of Cement.—6,822, F. Nell, Improved Method of Laying Wood, Stone, or other Blocks for Paving Roads, &c.

PROVISIONAL SPECIFICATIONS ACCEPTED.

3,283, R. Pearse, Opening and Closing Fanlights and Casements.—3,284, R. Pearse, Opening and Closing Fanlights and Casements through an Outer Wall.—3,493, J. Anderson, Automatic Saw Setting and Sharpening Machines.—4,438, A. Oakden and W. Sharpe, Improvements in Cooking Ranges.—4,968, C. Crestman and A. Lloyd, Combination Writing and Work Table.—5,129, R. Strachan and J. Henshaw, Parallel Vices, Clamps, &c.—5,442, F. Ransome, Manufacture of Cement.—5,583, N. Harrison and J. Coughtrey, Indicating Mechanism for Door Bolts.—5,636, S. Coombs, Mechanical Door Check.—5,639, R. Hodges and F. Lilley, Adjusting Door Knobs on attaching them to Spindles.—5,763, P. Walker, Improvements in Ventilators.—5,801, C. Brotherhood, Electric Bell Pushes, Contact-makers, and Indicators.—5,868, A. Davis and J. Langley, Combined Gas Pliers and Pipe Cutter.—2,000, R. Perrott, Boiler for Circulating Hot Water suitable for Kitchen Ranges, &c.—3,012, R. Hale, Joint Connexion of Sanitary Drain and other Pipes.—5,506, R. Heap, Improvements in Water-closet Seats.—5,767, G. Campbell, Improvements in Fire Grates.—5,773, H. Yull and J. Thompson, Water-waste Preventer.—6,071, H. Haddan, A Collapsible Wardrobe.—6,077, G. Thynne, Sanitary and other Pipe Joints.—6,337, J. Harrower, Improved Table.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

13,148, W. Lindsay, Improvements in Bridges.—2,873, S. Kirby, Construction of Gully Traps.—5,346, P. Lovett, Improvements in Hydraulic Cements.—5,374, G. Garrett, Machinery for Sharpening Circular Saws.—5,429, E. Heurtebise, Improvements in Hydraulic Elevators.—11,455, R. Evans, Improvements in Connexions for Metal Tie-rods for Roofs, &c.—11,533, J. Parker, Improvements in Automatic and other Sash Fasteners.—13,656, E. Booth and F. Dyer, An Improved Sanitary Appliance.—4,875 and 4,878, W. Lake, Manufacture of Nails.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

MAY 28.

By FLICK & SON.

Hoddesden, Herts—Eighteen plots of freehold land £1,040

JUNE 1.

By R. J. COLLIER.

Bermondsey—33 to 39 even, Stanworth-street, freehold 1,100

By MURRELL & SCOBELL.

West Croydon—Buccleuch House, freehold 1,100
Hackney-road—Improved ground-rent of 16*l.* 10s. a year, 31 years 225

By WEATHERALL & GREEN.

Whitechapel—83, Greenfield-street, freehold 610

By W. & F. HOUGHTON.

Walthamstow—1 and 2, Warwick Villas, freehold ... 400
A plot of freehold land adjoining 55

By INMAN & Co.

Islington—365 and 367, Liverpool-road, 24 years, ground-rent 12*l.* 710

By E. E. CROUCHER & Co.

Fulham—42 and 44, Haldane-road, 74 years, ground-rent 6*l.* 5s. 500

By J. W. MORLEY & Co.

Honor Oak—15, Herne Villas, 93 years, ground-rent 6*l.* 327

By WALFORD & WILSHIN.

Anerley—34, Station-road, 79 years, ground-rent 5*l.* 5s. 315
14, Selby Villas, 78 years, ground-rent 12*l.* 350

By H. W. SAFFELL.

Balham High-road—House and shop, 41 years, ground-rent 3*l.* 765
1a, 2, 3, 4, 5, 6, 7, and 8, Balham New-road, and a plot of land, 41 years, ground-rent, 3*l.* 1,170
Balham-hill—Holly Cottage, 41 years, ground-rent 2*l.* 4s. 100
Chelsea—47, Smith-street, 10 years, ground-rent 4*l.* 10s. 115

JUNE 2.

By W. HOLCOMBE.

Bayswater—Improved ground-rent of 11*l.* a year, with reversion for 7¾ years 770
Improved ground-rent of 7*l.* a year, with reversion for 8 years 335
Improved ground-rent of 6*l.* a year, with reversion for 8¼ years 310
Improved ground-rent of 14*l.* 10s., a year, with reversion for 6 years 985

By P. D. TUCKETT.

Enfield—Plumbridge Farm, and 295a. 3r. 27p., leasehold 5,000

By R. PERKINS.

Lee—12 and 14, Effingham-road, 88 years, ground-rent 11*l.* 600

By J. REVILL.

Deptford—78, Adolphus-street, freehold 820
Caledonian-road—10, Balmoral-grove, 77 years, ground-rent, 3*l.* 490
Lambeth—25, Paradise-street, 63 years, ground-rent 10*l.* 250

By J. A. SMITH.

Chiswick High-road—The "Bricklayers' Arms," freehold, and five cottages 2,250
Barnes—1 and 2, Lilian-road, freehold 700
6 and 7, Lilian-road, freehold 500
8, Castelnau-gardens, 54 years, ground-rent 8*l.* 10s. 750

By FAREBROTHER, ELLIS, & Co.

Fitzroy-square—12, Pitt-street, copyhold 680
Upper Norwood—1, Hillside Terrace, 73 years, ground-rent 6*l.* 6s. 375
Wadhurst, Sussex—Snape Farm, and 174 acres, copyhold 4,000
Hurley, Berks—The "Seven Stars" Inn, and 153a. 0r. 3p., freehold 5,100
Freehold enclosures of land, 165a. 2r. 39p. 1,500
Freehold cottage, and 1a. 2r. 31p. 300
Goulders, and part Scotland Farms, 164a. 3r. 18p., freehold 7,200
Freehold orchard and woodland, 3a. 1r. 15p. 400

JUNE 4.

By RICE BROS.

St. John's Wood—Ground-rents of 30*l.* a year, term 35 years 500
Ground-rents of 64*l.* a year, term 35 years 1,090

By COOPER & GOULDING.

Battersea—25, Church-road, freehold 310

By G. WOODS.

St. John's Wood—17 and 18, Queen's-road, 35 years, ground-rent 14*l.* £960

By NEWBON & HARDING.

Clerkenwell—31, Myddelton-square, 27 years, ground-rent 9*l.* 7s. 6d. 555
Islington—78, Shepperton-road, 23 years, ground-rent 5*l.* 270
55, Rotherfield-street, 51 years, ground-rent 4*l.* 4s. 370
Stoke Newington—23 to 29 odd, Allen-road, 80 years, ground-rent 26*l.* 985

By W. A. BOWLER.

Lawford, near Manningtree—Freehold marsh land, 9a. 3r. 25p. 650

By MARSH, MILNER, & LANGTON.

Fitzroy-square—167, Cleveland-street, 5 years, ground-rent, 6*l.* 6s. 165
Paddington—26, Cambridge-street, 37 years, ground-rent 10*l.* 1,150
9, Polygon-mews South, 37 years, ground-rent 4*l.* 320
Hayward's-heath, near—The "Bent Arms," and a cottage, freehold 1,405
Ivy House, and 1a. 0r. 11p., freehold 1,310
Freehold cottage in High-street 290
The Manor House, with grounds 1,060
Three enclosures of freehold land, 7a. 2r. 27p. ... 820
Two enclosures of freehold land, 5a. 3r. 7p. 605
Hampton—Four freehold cottages 1,590
The residence, Florence Grove, and grounds 570

JUNE 5.

By BEAN, BURNETT, & ELDRIDGE.

Bedford Park—1 and 19, The Avenue, 89 years, ground-rent 25*l.* 12s. 1,030
4, 6, 7, and 9, The Avenue, 89 years, ground-rent 39*l.* 1,610
Life interest in 228*l.* 8s. a year, secured upon shares in limited companies, also a policy for 600*l.*, life aged 54 650

MEETINGS.

MONDAY, JUNE 15.

Liverpool Architectural Society Junior Debating Club.—Mr. T. J. Dalziel will open a discussion on "Early Gothic Vaulting."

Inventors' Institute.—8 p.m.

WEDNESDAY, JUNE 17.

Royal Meteorological Society.—Six papers to be read. 7 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting. 8.30 p.m.

Manchester Society of Architects.—General Meeting. 3 p.m.

Society of Engineers.—Visit to the Tilbury Docks.

THURSDAY, JUNE 18.

Society of Antiquaries.—8.30 p.m.

Dundee Institute of Architecture.—Business meeting for Election of Officers, &c.

Miscellanea.

Sewer Accidents.—A serious accident has occurred at Kingsland, whereby two workmen, named George Pimm and George Cobb, in the employ of Mr. W. Rigby, contractor for the Holloway and Northern High Level Sewers relief lines, have lost their lives.——Another serious accident, though fortunately not attended by loss of life, occurred on Monday evening near the Sloane-square Station of the District Railway, where a new sewer has for some time been in course of construction by the Metropolitan Board of Works. It is an iron one, and runs parallel with the old brickwork sewer which it is designed to replace. Shortly after three o'clock in the afternoon, the old sewer, which, though still in use, appears to have been in a very unsatisfactory state of repair, suddenly burst, and discharged its contents through a cavity in the railway tunnel, which had been made to admit of the necessary operations in the construction of the new sewer. The station at Sloane-square soon became flooded with the matter which poured into the tunnel, and all traffic was necessarily brought to a standstill.

The Sanitary Institute of Great Britain will hold its Autumn Congress at Leicester from September 22 to 26 inclusive. The President of the Congress is Professor de Chaumont; the Sectional Presidents will be, in the department of "Sanitary Science and Preventive Medicine," Mr. Arthur Ransome; in the section of "Engineering and Architecture," Mr. Percival Gordon Smith; and in that of "Chemistry, Meteorology, and Geology," Mr. William Marcet, M.D., F.R.C.P., F.C.S., F.R.S. Papers are limited to twenty minutes in reading, and the discussion upon them to ten minutes each speaker. Each author should prepare an abstract of his paper and send it, together with the original manuscript, by book-post, on or before August 26th, addressed to the Secretary, Sanitary Institute of Great Britain, 74a, Margaret-street, W.

The Albert Palace, Battersea Park, was opened on Saturday last, under very depressing circumstances so far as the weather was concerned. Nevertheless, the proceedings of the day augured well for the future of the Palace, which has already been described at some length in our columns.

Annual Dinner of the Architectural Association.—The retiring President, Mr. Cole A. Adams, presided at the dinner on Wednesday last. There were not so many members present as usual, but the Duke's Saloon at the Holborn Restaurant was comfortably filled. The toast of the "Army and Navy, &c." was proposed by the President and responded to by Mr. Henry Lovegrove, who referred to the work of the Association, with which he had been so long connected. Mr. Blashill proposed the toast of the "Royal Institute of British Architects," and Mr. James Brooks responded in a most able and energetic way. Mr. Robinson proposed the "Visitors," and Mr. W. P. Appleton (brother of the honorary secretary) responded. Mr. Horace Cheston proposed the "Officers of the Architectural Association," and Mr. Douglass Mathews, Mr. Pratt, and Mr. Berry responded. Mr. W. P. Appleton gave two capital recitations, and Mr. C. G. Killmister delighted the audience with his pianoforte performance.

The North Sea and the Baltic Canal.—The project for a sea canal across Holstein, connecting the Baltic with the North Sea, appears at length to be on the point of realisation. The details which have just been submitted to the Chancellor, Prince Bismarck, and referred by him to the Prussian State Council, as well as to the Federal Council, will, it is understood, receive the formal approval of those bodies at their next meeting. The estimated cost of the work is 156 million marks, or 7,800,000*l.*, of which sum Prussia will find two millions and a half sterling, the remainder being contributed by the other German States.

Wood Block Flooring.—Messrs. Geary & Walker's patent system of wood block flooring has recently been laid at the Royal Eye Hospital, Manchester; Post-offices at Leeds, Liverpool, and Doncaster; St. Chad's Church, Liverpool; and other places. It is also being laid at Glossop Hall, for Earl Howard; churches at Shilbotel, near Newcastle-on-Tyne; Wednesbury and Stonefold, near Accrington; also at several schools, hospitals, &c. We have drawn attention to Messrs. Geary & Walker's system of flooring previously, but may add that they show samples at the Inventions Exhibition.

New River Bridge betwixt Sunderland and Durham.—As an important district public improvement the erection of a new bridge over the river Wear at Low Cocken has lately been commenced. The contract for masonry and piling has been let to Mr. R. Allison, builder, Sunderland; and the wrought-iron lattice girders, of 120 ft. span, with Lindsay's patent trough steel flooring, to Messrs. Head, Wrightson, & Co., Stockton-on-Tees. The works are being carried out from the plans and superintendence of Mr. D. Balfour, Assoc. M. Inst. C.E., Houghton-le-Spring, Sunderland.

New Mission Hall, Lavender Hill.—A new Mission Hall, in connexion with the Church of the Ascension, was commenced on Monday last. It is to be built in two portions, each to accommodate 500 adults, at a total cost of 2,667*l.* Mr. Charles Ansell, of York-street, Lambeth, is the builder. The architects are Messrs. Romaine-Walker & Tanner.

Female School of Art.—By command of the Queen, a fan has been designed and painted on silk by Alice Elfrida Manly, which is intended as a gift from her Majesty to the Princess Beatrice on Her Royal Highness's approaching marriage.

Wilberforce Mission House, Newington Butts.—On Monday last the new works to the above were started for the Bishop of Rochester and Trustees of the Wilberforce Memorial Fund. In August last the Rev. C. H. Grundy entered the new house as first Wilberforce Missionary. The work has increased to such an extent as to demand the addition of a large reception-room for meetings of associations and persons engaged or interested in Church work in South London. An admirable site has been secured adjoining the Mission House. Messrs. H. Burman & Sons were builders to the work last year. Mr. Frederick Higgs is the builder of the additions. The entire works have been carried out from the designs and under the superintendence of the architects, Messrs. Romaine-Walker & Tanner, of Buckingham-street.

Inventions Exhibition.—We are informed that Messrs. W. H. Lascelles & Co. have supplied the walnut doors and fittings in the Council-room of the International Inventions Exhibitions.

CONTRACTS AND PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Water-Mains, Pipes, and Fittings	War Department	*Official*	June 15th	i.
New Passenger Station, Bishop Auckland	North Eastern Railway	W. Bell	June 17th	xix.
Well-Pumps, and Additions to Tank	West Ham Union	*Official*	do.	xix.
Paving	Hendon Union	do.	do.	xix.
Villa Residence, Herne Bay		J. G. Hall	do.	xix.
Stoneware Drain-Pipes	Enfield Local Board	W. Kitteringham	June 18th	ii.
Painting	Westminster Union	*Official*	June 19th	xix.
New Infant School, &c.	Woodford School Brd.	E. Tidman	do.	xix.
Erection of Drill Shed, &c.	Admiralty	*Official*	do.	ii.
Furniture and Fittings	London School Board	do.	June 22nd	xix.
Cast-Iron Socket, &c., Pipes	East Cowes Local Brd.	J. R. Mann	do.	xix.
New Sunday-Schools, Northampton		S. J. Newman	do.	ii.
Painting, &c., Caterham	War Department	*Official*	do.	ii.
Gasholder Tank	Canterbury Gas Co.	H. E. Jones	do.	xix.
Erection of Shops		E. Monson, jun.	June 23rd	xix.
Carriage Timber	Great Western Ry. Co.	*Official*	do.	ii.
Wood Paving Blocks, Portland Cement, &c.	Bath U. S. A.	C. R. Fortune	June 24th	ii.
Enlarging Newport (Mon.) Post-office	Com. of H.M. Works	*Official*	June 26th	ii.
Flushing Tanks and Pipe Sewer	Beckenham Local Board	G. B. Carlton	June 29th	xix.
Paving High-street	New Windsor U. S. A.	*Official*	June 30th	ii.
Laying Pipes, &c.	Cardiff Corporation	J. A. B. Williams	July 1st	xix.
New College, Canterbury	Kent Wesleyan Methdst School Association	Chas. Bell	July 2nd	ii.
Sewerage, Farningham and Eynsford	Dartford U. R. S. A.	G. H. Tait	July 3rd	ii.
Construction of the Dewsbury Branch Railway	Great Northern Ry. Co.	J. Fraser & Sons	do.	ii.
Construction of Crofton Branch Railway	Gt. Nrthrn and Manch. Shffld. and Lincln. Ry.	do.	July 7th	ii.
Sewage Works	Portsmouth U. S. A.	Sir F. Bramwell	July 15th	ii.
Erection of a New Mission Hall		W. Ranger	Not stated	ii.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page.
Engineer	Llanfrechfa Upper L. B.	Not stated	June 20th	xvi.

TENDERS.

For rebuilding Knighton Workhouse, for the Guardians of Knighton Union, Radnorshire. Messrs. Jones & Parke, architects, Newtown. Quantities not supplied:—

Thomas, Watkins, & Jenkins, Swansea	£8,600 0 0
Price & Deakin, Knucklas	7,569 0 0
Weale, Ludlow	7,450 0 0
E. Davies & Son, Newtown	6,753 0 0
Bowers & Co., Hereford	6,599 0 0
J. Williams, Knighton*	6,589 0 0

* Accepted, after reductions, at 6,300*l.*

For the erection of four shops, Russell-street, Stroud. Mr. J. Platt Lofthouse, C.E., architect:—

Geo. Drew, Chalford	£2,700 0 0
Bowers & Co., Hereford	2,549 0 0
Jas. Greenslade, Stroud	2,300 0 0
W. Harper, Stroud	2,143 13 0
English & Son, Stroud (accepted)	1,975 0 0

Accepted for erecting the St. James's Temperance and Mission-hall, Royal-road, Kennington Park. Mr. Banister Fletcher, architect:—

Aldridge & Jenvey	£2,650 0 0

[No competition.]

For New Central Stores, Newgate-street, Newcastle-on-Tyne, for the Newcastle-on-Tyne Co-operative Society, Limited. Mr. Edward Shewbrooks, F.R.I.B.A., architect, Newcastle-upon-Tyne:—

Tyrie & Graham, Gateshead	£11,730 9 7
E. B. Reed & Son, Newcastle	11,376 0 0
Joseph Elliot, Newcastle	10,960 0 0
T. & R. Lamb, Gateshead	10,954 0 0
J. Ferguson, Newcastle	10,947 0 0
N. & R. Reed, Newcastle	10,865 0 0
Haswell & Waugh, Gateshead	10,510 0 0
R. Allison, Sunderland	10,400 5 0
H. Atkinson, Blaydon-on-Tyne	10,335 4 0
Middlemiss Bros., Newcastle	10,285 13 9
Brownhead & Keswick, Newcastle	10,100 2 0
J. & W. Lowry, Newcastle*	9,981 1 0

* Accepted.

For erecting work premises in Short-street, Hoxton. Mr. R. A. Lewcock, architect and surveyor, Bishopsgate-street Within:—

Marr	£763 0 0
Jackson & Todd	749 0 0
Roome	717 0 0
Shurmur	707 0 0
Anley	705 0 0
Steele Bros.	674 0 0
Pringle	628 0 0
Goodall	610 0 0

For performing sundry external repairs to thirty houses in Aske-street and Fanshaw-street, Hoxton. Mr. R. A. Lewcock, architect and surveyor:—

Anley	£420 0 0
Marr	315 0 0
Jackson & Todd	295 0 0
Pringle	295 0 0
Roome	290 0 0
Shurmur	172 0 0
Steele Bros.	165 0 0

For erection of jam factory, for Messrs. Geo. Pickard & Sons. Mr. R. Frank Vallance, architect, Mansfield. Quantities by the architect:—

Bradley & Barker, Nottingham	£1,939 0 0
Chas. Vallance, Mansfield	1,893 0 0
S. & G. Frisby, Mansfield	1,778 0 0
Fisher Bros., Mansfield	1,740 0 0
J. Greenwood, Mansfield	1,670 0 0
H. Alsop, Mansfield (accepted)	1,632 9 0

For erection of boundary-walls, forming footpaths, &c., Crow-hill, Mansfield, for Mr. R. Barringer. Mr. R. Frank Vallance, architect. Quantities by the architect:—

Wm. Sills	£150 0 0
Thos. Millott	135 18 8
J. Greenwood	130 0 0
Fisher Bros.	114 11 4
W. A. Vallance	98 16 3

[All of Mansfield.]

For making new streets, Crow-hill, Mansfield. Mr. R. Frank Vallance, architect. Quantities by the architect:—

Thos. Millott, Mansfield	£335 4 4
Fisher Bros., Mansfield	294 17 8
W. A. Vallance, Mansfield	290 9 0
John Lane, Skegby	279 4 0
J. Greenwood, Mansfield (accepted)	271 0 0

Accepted for erection of new Sunday-schools in connexion with the Unitarian Chapel, Mansfield. Mr. R. Frank Vallance, architect. Quantities by the architect:—

Chas. Vallance, Mansfield	£524 0 0

For new Wesleyan Chapel at Brailes, Warwickshire. Mr. W. Ranger, architect, London:—

King	£384 7 6
Adkins	384 0 0
W. Pickering	334 10 0
J. Pickering & Sons	334 6 6
Attwood (accepted)	330 0 0
Hoare & Gardner	320 0 0

For additions and improvements to the United Methodist Free Church, Radstock, Somerset, for the Trustees. Plans, specifications, and quantities by Mr. W. F. Bird:—

William Tovey	£498 19 0
Joseph Bird, Frome-hill, Radstock*	480 10 0
Wheeler & Gregory	454 2 6

* Accepted.

For alterations to the "Adelaide," Liverpool-road, for Mr. Budd. Mr. Arthur W. Saville, architect, 99, Strand. Quantities supplied:—

Buckle	£336 0 0
Clinch & Pattern	270 0 0
Royal	266 0 0
Hawkins	263 0 0
Cook	243 0 0
Walker	243 0 0
Ward & Lamble	235 0 0
Heath (accepted)	198 0 0

For the erection of a Welsh Calvinistic Chapel in the Southerton-road, Hammersmith. Mr. John Owen, architect, John-street, Thornhill-square. Quantities by Messrs. Johnstone & Paine, Bedford-row:—

	Chapel, &c.	House, Heating.
J. Grover & Son	£1,524	£50
L. H. & R. Roberts	1,509	—
H. J. Williams	1,469	—
E. J. Chant	1,437	30
T. Richards, 61, Vincent-square*	1,412	42

* Accepted.

For building house (exclusive of ground-work, bricks and sand, smiths' and plumbers' work), Leicester-road, New Barnet. Mr. Joseph White, surveyor:—

Daniels	£310 0 0
Prentice	265 0 0
Ellwood (accepted)	259 10 0

Accepted for house and stable (with additional work), at Potter's Bar, Middlesex, for Mr. G. Salmon. Mr. Joseph White, surveyor:—

Reed, Leytonstone	£610 0 0

For alterations at the "Star," corner of Old-street, City-road. Mr. R. A. Lewcock, architect and surveyor, Bishopsgate-street Within:—

Battersbill	£590 0 0
Jackson & Todd	538 0 0
Marr	520 0 0
Anley	510 0 0
Walker	497 0 0
Steele Bros.	495 10 0

For the formation and metalling of new roads, and the laying of a 9-inch pipe-sewer, on the Grange-road Estate, Cambridge, for St. John's College. Mr. J. Carter Jonas, surveyor, Cambridge:—

Wm. Saint	£930 0 0
Swann Bros.	905 0 0
Geo. Honour	675 0 0
Thoday & Son	647 0 0

[Surveyor's estimate, 700*l.*]

For stabling and lodge, at Kidderminster, for Mr. M. Tomkinson. Mr. J. M. Gething, architect:—

R. Thompson	£996 10 0
Binnian & Son	973 0 0
Howard & Sons	914 0 0
H. Smith (accepted)	895 0 0

[All of Kidderminster.]

For office screens and fittings, at Kidderminster, for Messrs. R. Smith & Sons. Mr. J. M. Gething, architect:—

Howard & Sons, Kidderminster	£404 0 0
J. Field, Kidderminster	362 0 0
W. Snowdon, Rochdale (accepted)	340 0 0
W. Atkins, Kidderminster	325 12 6

For new school for girls at Folkestone, for the Kent Wesleyan Methodist School Association. Messrs. Ruck, Son, & Smith, architect, Maidstone. Quantities supplied:—

C. J. Slade, Maidstone	£7,800 0 0
Hayward & Paramor, Folkestone	6,580 0 0
H. Clemmans, Folkestone	6,481 0 0
Wm. Brooks, Folkestone	6,440 0 0
H. M. Moody, Folkestone	6,400 0 0
E. Webster, Folkestone	6,320 0 0
Geo. Prebble, Folkestone	6,309 0 0
W. J. Wiles, Dover	6,200 0 0
E. C. Howell & Son, London	6,150 0 0
J. Bingham, Headcorn	6,113 0 0
H. Unwin, Folkestone	6,076 10 0
Wallis & Clements, Maidstone	5,973 0 0

For alterations to No. 43, Great Russell-street, and No. 33, Duke-street, W.C., for Messrs. Jones & Willis. Mr. A. R. G. Fenning, architect, 10, Lincoln's Inn-fields:—

T. Rider & Son	£1,231 16 6
J. Hooper (accepted)	1,023 1 9

Accepted for building new board-room and lavatories, and for other alterations, at No. 3, Great College-street, Westminster, for the Lancashire and Yorkshire Railway Company. Plans, specification, and designs by Mr. James Norris, surveyor, Vauxhall Bridge-road, Westminster:—

Frederick A. Anear, 1, Wood-street, Westminster	£960 0 0

Accepted for the erection of shops and cottages in Bridge-street, Greenwich, for Mr. Blackmur. Mr. R. W. Crawley, architect, Trinity-square, Tower-hill:—

H. L. Holloway	£1,690 0 0

[No competition.]

For painting and repairing works at the Infirmary and Workhouse in the Fulham-road, for the Guardians of the Poor of the St. George's Union. Mr. H. Saxon Snell, architect, Southampton-buildings:—

W. Bamford	£1,150 0 0!
Vigor & Co.	1,142 0 0
C. F. Kearley	1,045 0 0
Munday Bros.	950 0 0
Hudman & Worsley	950 0 0
F. Stevenson	860 0 0
W. Brown	815 0 0
W. G. Lily	669 0 0
Dicksee & Dicksee	655 0 0!

For sewering, kerbing, channelling, and making roads and paths to east end of South-street, Colchester. Mr. G. H. Page, surveyor, Trinity-chambers, Colchester:—

C. Nason	£170 0 0
G. Lee	152 10 0
C. Cappin	148 4 6
A. Gladwell	135 0 0
G. Bowles	132 17 6

For external painting at the school, &c., and internal decorative repairs, at the Asylum for Imbeciles at Darenth, near Dartford, Kent, for the Metropolitan Asylums Board. Messrs. A. & C. Harston, architects, Leadenhall-street. Quantities not supplied:—

H. R. Swain	£1,124 9 6!
W. Reid	877 0 0
A. W. Derby	775 0 0
M. McCarthy	649 0 0
Dicksee & Dicksee	640 0 0
Gibbin & Son	499 10 0
F. Stevenson	495 0 0
W. G. Lilley	440 0 0
E. Proctor, Wellington-street, Woolwich (accepted)	380 0 0!

Accepted for alterations to the Imperial Hotel, Clacton-on-Sea, for Messrs. T. Daniell & Sons, West Bergholt. Mr. J. W. Start, architect, Colchester:—

H. Wilkinson, Clacton-on-Sea	£102 5 0

Making-up Mount View-road, Stroud-green.—Mr. Wm. Nicholls, road and sewer contractor, of Truro-road, Woodgreen, writes:—"Will you be kind enough to correct the list of Tenders which appeared in your issue of the 6th [p. 819], for making-up Mount View-road, Stroud-green, for the Hornsey Local Board. They evidently should not have been published. Mr. Walker having withdrawn, my Tender being next lowest has been accepted. The last two items on the list should have appeared as follows:—

Wm. Nicholls, Wood-green (accepted)...£1,253 0 0
A. Walker, Upper Holloway (withdrawn) 1,127 3 0."

[We printed the list as sent to us by the Surveyor to the Local Board.]

SPECIAL NOTICE.—Lists of Tenders frequently reach us too late for insertion. They should be delivered at our Office, 46, Catherine-street, W.C., *not later than Four p.m.* on THURSDAYS.

TO CORRESPONDENTS.

A. D. & Co.—S. & E.—E. S. B.—"Blunderbuss" (write to the Secretary of the Surveyors' Institution).—J. B. (ask a lawyer).—A. & G.—W. E. M.—E. L.—"170" (we have no greater facility for getting the information than you have).—C. H. M.—J. B.—Messrs. E. A.—J. C. B.—H. H. A. (thanks; sketch shall be duly returned).—"Subscriber" (there is no direct precedent as regards a Surveyor, but it seems clear that the Surveyor would not be liable unless he had been negligent or utterly ignorant of his business. See the point shortly discussed in "Roscoe's Digest of Building Cases," p. 51).

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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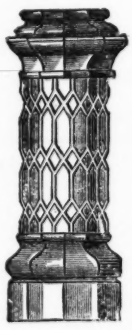

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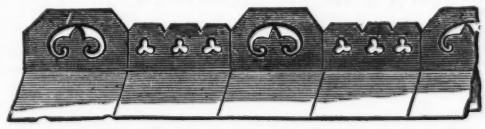

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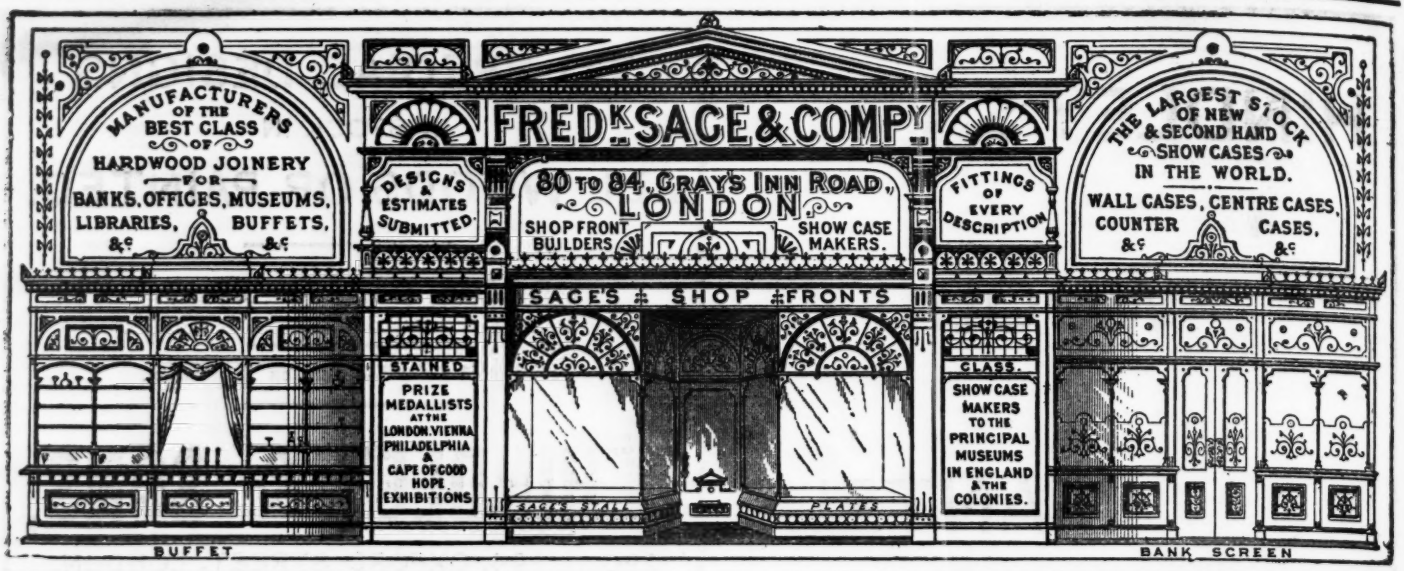
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WATERWORKS.

WANTED, an experienced ENGINEER, to make surveys, take levels, make detail plans and sections, take out quantities, and prepare specification, and estimate for the construction of Reservoir Filter Beds, cost of main pipes, services, hydrants, laying and fixing, and all works in connexion with the same.

He will be required to reside in the district, provide the necessary instruments, office, and furniture for his use, and devote the whole of his time in superintending the construction and carrying-out of the works.

Application (accompanied with testimonials), stating age, qualification, experience, and salary required, to be made in writing, and delivered at the Office of the Clerk to the Board, Mr. J. H. WAINWRIGHT, Club Chambers, Pontypool, not later than SATURDAY, JUNE 20th, 1885.

PARTNERSHIP WANTED in the ARCHITECTURAL PROFESSION, &c. Will give some capital. None need reply that are not genuine. London, West End preferred, and person must have been established some years. Or would take a good APPOINTMENT, and give good security.—Address, at once, to Box 238, Office of "The Builder."

PARTNERSHIP.—An ARCHITECT, at present practising in an important provincial town, requires a JUNIOR PARTNERSHIP with a well-established practitioner possessing a high-class connexion. The Advertiser, who is twenty-seven years of age, is very energetic and hard-working, is a good draughtsman and designer (a frequent exhibitor at the Royal Academy), and is an Associate (by examination) of the Royal Institute of British Architects.—Address, ARCHITECT, care of B. F. Potts, esq. C.E. 55 and 56, Chancery-lane, London, W.C.

PREMIUM PUPIL WANTED, at a Works at which White and Coloured Glazed Bricks, Fire-Bricks, &c. are largely Manufactured.—For particulars, address, Box 134, Office of "The Builder."

ARTICLED PUPIL, with Premium (VACANCY for). Also a CLERK REQUIRED.—Apply to JOHN WILLS, Architect, Victoria-chambers, Market Head, Derby.

TO PARENTS and GUARDIANS.—A VACANCY for a well-educated Youth as PUPIL. Premium required.—Address, Mr. C. GRIFFIN LAWSON, Assoc. M.Inst.C.E. Engineer and Surveyor, Local Board Offices, Southgate, London, N.

BUILDER'S CLERK WANTED. Thorough bookkeeper. Must be well up in prime cost and estimating.—State age, salary, and references, by letter only, to A. B. 63, Somerville-road, Peckham, S.E.

BUILDER'S CLERK WANTED. One thoroughly accustomed to prime cost, day accounts, and the general routine of a Builder's Office.—Particulars as to age, salary, and references.—Box 252, Office of "The Builder."

BUILDER'S CLERK WANTED. Must be able to estimate, trace, measure up, keep prime cost and general work of builder's office. First-class references required.—State age, salary, and all particulars to Box 255, Office of "The Builder."

CLERK.—A YOUTH WANTED, in a Builder's Office, accustomed to the Business preferred. Must write a good hand, and quick at figures.—Apply, by letter, stating age and salary required, to VERNALL & GRIFFITHS, Builders, No. 12, Albany-street, Regent's Park, N.W.

POPLAR UNION.

APPOINTMENT OF WORKHOUSE OFFICERS.

The Guardians of the above Union will, at their Meeting to be held on FRIDAY, the 19th day of JUNE, 1885, proceed to Elect a

SUPERINTENDENT OF LABOUR,

at a salary of 40*l.* per annum; and an

ASSISTANT FEMALE NURSE,

at a salary of 20*l.* per annum, with Board, Lodging, and Washing in the Workhouse for each officer.

Uniforms will be provided for the Male Officer.

In the case of the Superintendent of Labour, preference will be given to Mechanics.

Applicants may be Man and Wife.

The appointments will be subject to the approval of the Local Government Board.

Applications, made upon printed forms (to be obtained at my Office), with copies of testimonials of recent date, are to be sent to me not later than WEDNESDAY, the 17th inst. and Candidates must attend at the Board-room, High-street, Poplar, at HALF-PAST THREE o'clock p.m. on the said 19th day of JUNE, but no expenses will be allowed.

Canvassing the Guardians is prohibited.

JAMES RIPLEY COLLINS,
Clerk to the Guardians.

High-street, Poplar, E.
June 6, 1885.

GENERAL FOREMAN WANTED, at once Must have had previous experience in erecting Artisans' Dwellings.—Apply, Box 254, Office of "The Builder."

YOUTH WANTED, on a large Job in the country. An intelligent youth as Time and Store Keeper, and to do tracing. One having some experience of a builders' office preferred.—Apply to CONTRACTOR, 3, Pinners-court, Old Broad-street.

LEAD GLAZIER and CUTTER Wanted. Also ordinary Cutter and Glazier. If good hands, constant job. Living West preferred.—Box 256, Office of "The Builder."